Montana Occupational Health Indicators
2004-2019

Prepared by
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Montana Occupational Health and Safety Surveillance Program (MOHSS)

Montana Department of LABOR & INDUSTRY

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List of terms and abbreviations

ACBS: Asthma Call-Back Survey

BLS: U.S. Bureau of Labor Statistics

BRFSS: Montana Behavioral Risk Factor Surveillance System

CDC: Centers for Disease Control and Prevention

CFOI: BLS Census of Fatal Occupational Injuries

CPS: BLS Current Population Survey

CSTE: Council for State and Territorial Epidemiologists

DPHHS: Montana Department of Public Health and Human Services

FTE: Full-Time Employees

MHA: Montana Hospital Association

MOHSS: Montana Occupational Health and Safety Surveillance Program

NIOSH: National Institute for Occupational Safety and Health Program

OHI: Occupational Health Indicator

SOII: BLS Survey of Occupational Injuries and Illnesses

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Please note this document only contains data from 2004-2019.

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INTRODUCTION

Occupational health surveillance identifies, tracks, and monitors work-related injuries and diseases as well as their causes, in order to identify and remediate unsafe workplace activities, hazards, and exposures. The goal of the Montana Occupational Health and Safety Surveillance System (MOHSS) is to bridge the gap between occupational health surveillance and prevention/safety efforts in Montana. Monitoring the occupational health and safety landscape in Montana will reveal areas in need of more in-depth surveillance, and guide prevention efforts for the Montana workforce.

This report presents information and commentary on 25 Occupational Health Indicators (OHIs) for the state of Montana over the past 16 years. These indicators provide a measure of occupational health for various workplace environments and occupations, based on data from a variety of sources. These indicators were developed and recommended by the Council for State and Territorial Epidemiologists (CSTE), in collaboration with the National Institute for Occupational Safety and Health (NIOSH), and the Centers for Disease Control and Prevention (CDC). The most recent OHI data that has been verified by NIOSH is from 2019. Using a combination of previously compiled state and federal data as well as recently analyzed Montana occupational health information, this report contains OHI statistics spanning from 2004 to 2019. Whenever possible, federal OHI data from the Bureau of Labor Statistics (BLS) will be used as a baseline for analysis of Montana surveillance data. It bears mentioning publicly available federal OHI data has not been published for 2018 and 2019 yet. Therefore, most federal/state comparisons omit 2018 and 2019 for federal trend identification.

Occupational health indicators included in this report:

- 2 Demographic indicators – details trends in Montana workforce demographics such as profession, age, and unemployment rate
- 16 Health effect indicators – measures of injury or illness that indicate adverse effects from exposure to known or suspected occupational hazards
- 1 Exposure indicator – measure of markers in human tissue or fluid that identify the presence of a potentially harmful substance resulting from exposure in the workplace
- 3 Hazard indicators – measures of potential worker exposure to health and safety hazards in the workplace
- 1 Intervention indicator – measures of intervention activities or intervention capacity to reduce workplace health and safety hazards
- 1 Enforcement indicator – details Occupational Safety and Health Administration (OSHA) enforcement activities.

The purpose of developing the OHIs was to allow states to compare their health or risk status to other states as well as to the national average. The intention is to guide priorities for prevention and intervention efforts (CSTE). This indicator data will help raise awareness and build capacity for addressing occupational health issues within the individual states. The current instructions (as of July 2022) for calculating the occupational health indicators included in this report can be found at (www.cste.org/page/OHIndicators).

Montana Employment Demographics

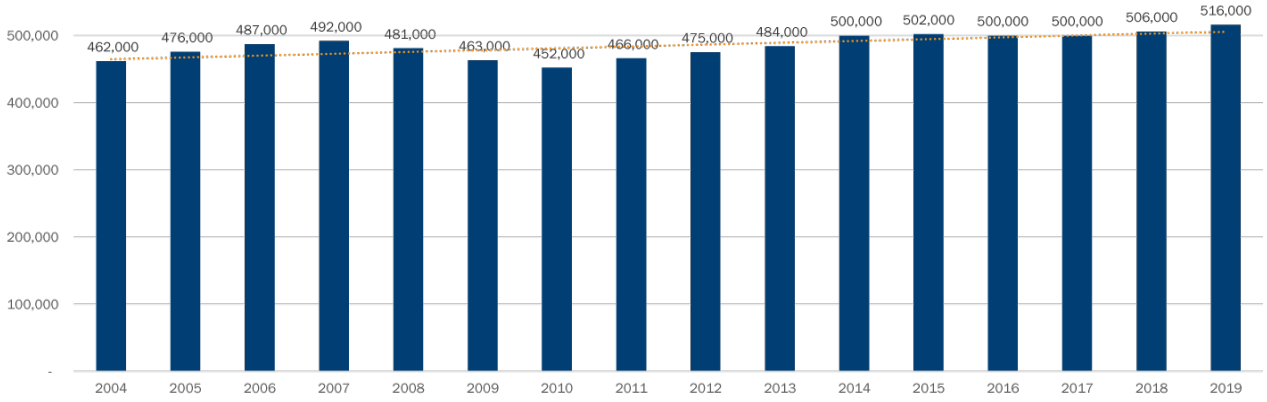
Background

It is essential to understand the detailed composition of the workforce in Montana in order to assess possible work-related risks and to develop effective prevention strategies for our worker population. Understanding the characteristics of the workforce allows for more detailed analysis of worker subgroups and industries that may be experiencing higher than expected rates of work-related injuries or illnesses. Furthermore, analysis of demographic data allows for a better understanding of workplace diversity in terms of age, ethnicity, etc.

Results

In 2019, Montana's workforce consisted of 516,000 persons (Fig. P.1), with an unemployment rate of 3.5%. Self-employed workers represented 8.3% of the workforce, and workers with part-time jobs represented 21.1% of the workforce in 2019. These statistics suggest a growing Montana workforce (Fig. P.1) but also represent a slight downward trend in self/part-time employment (Figs. P.2, P.3).

Figure P.1 – Total number of employed persons in Montana, 2004-2019



Source: BLS Geographic Profiles of Employment and Unemployment

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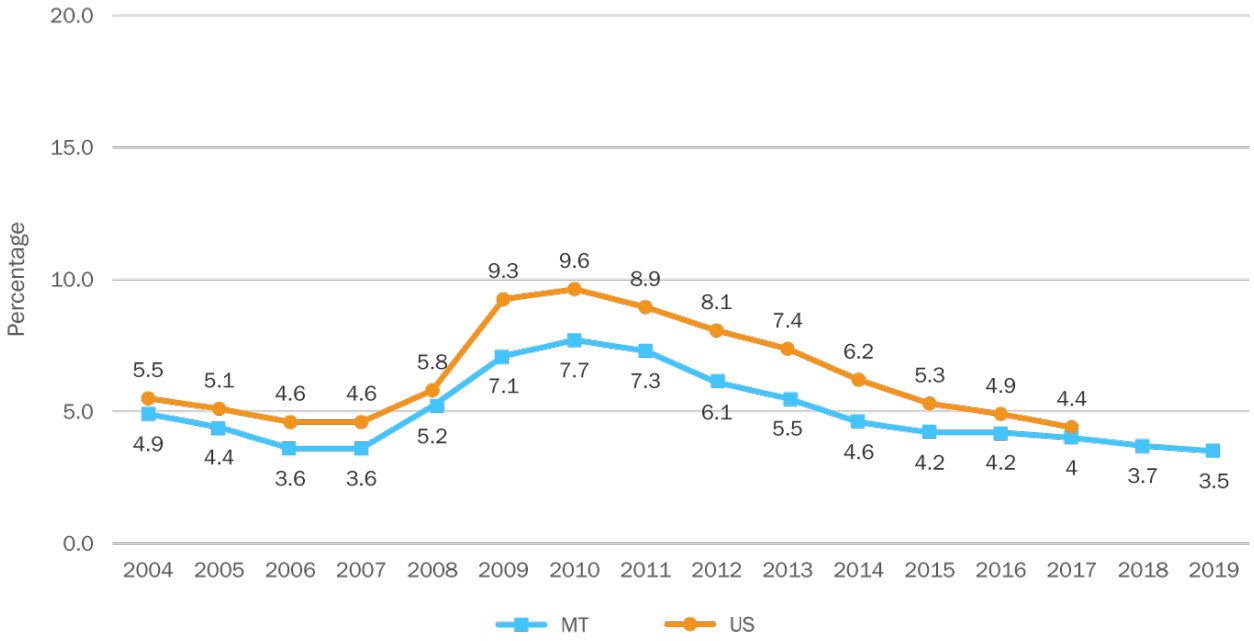
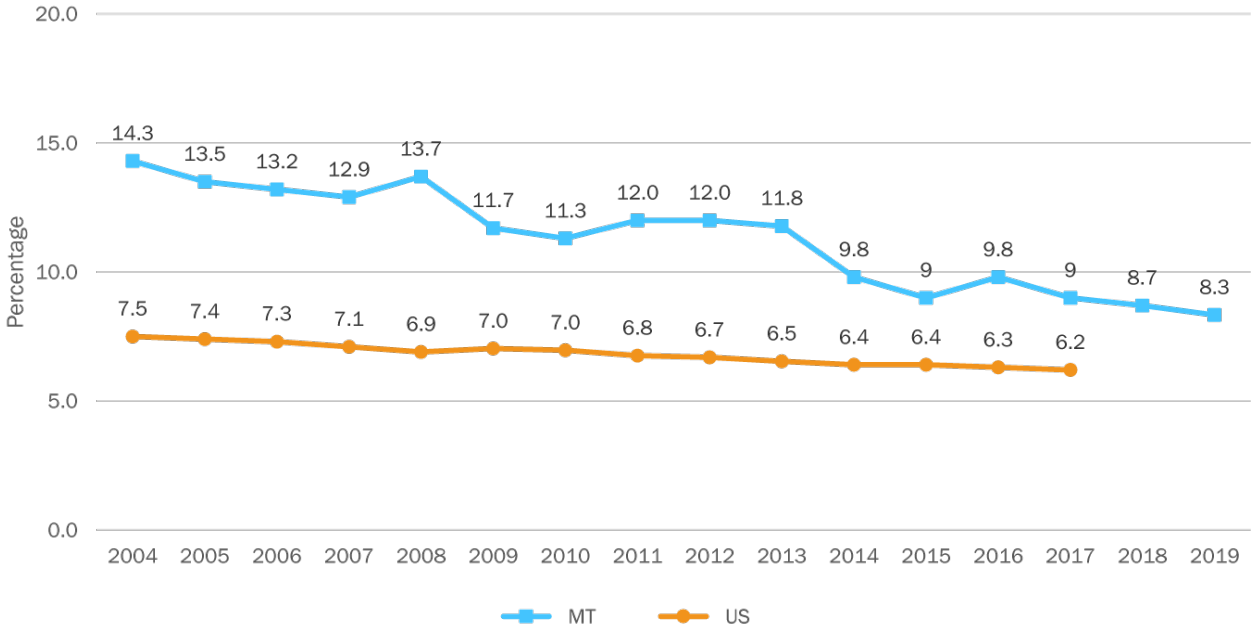
Figure P.2.1 - Percentage of persons who are unemployed, Montana (2004-2019) and the U.S., 2004-2019



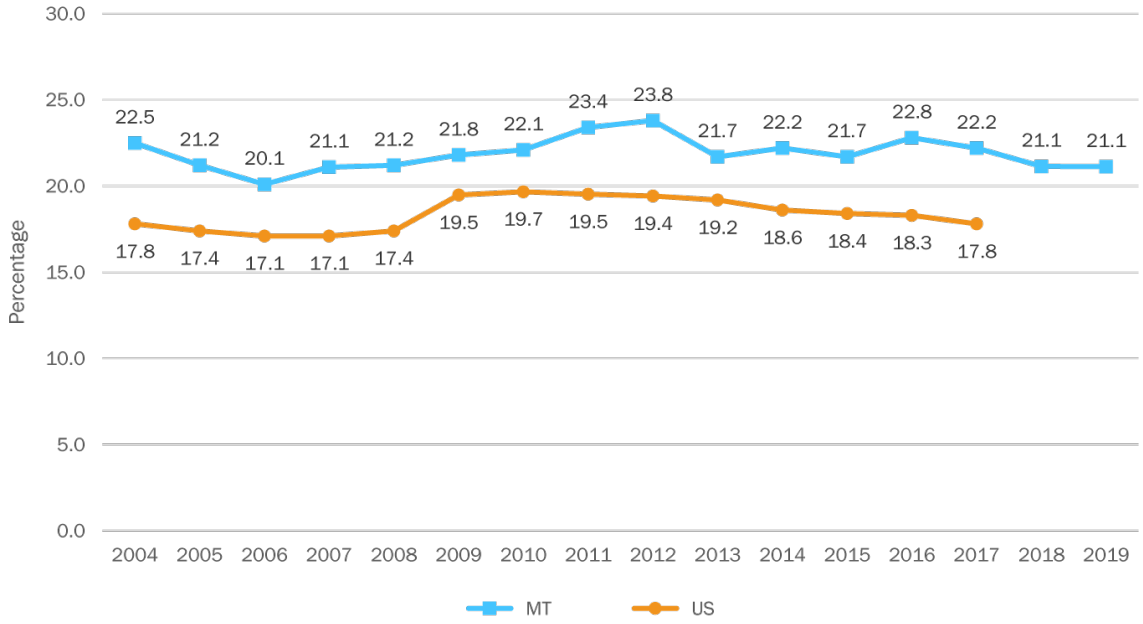
Source: BLS Geographic Profiles of Employment and Unemployment. National data not yet available for 2018 and 2019.

Figure P.2.2 - Percentage of employed persons who are self-employed, Montana (2004-2019) and the U.S., 2004-2017



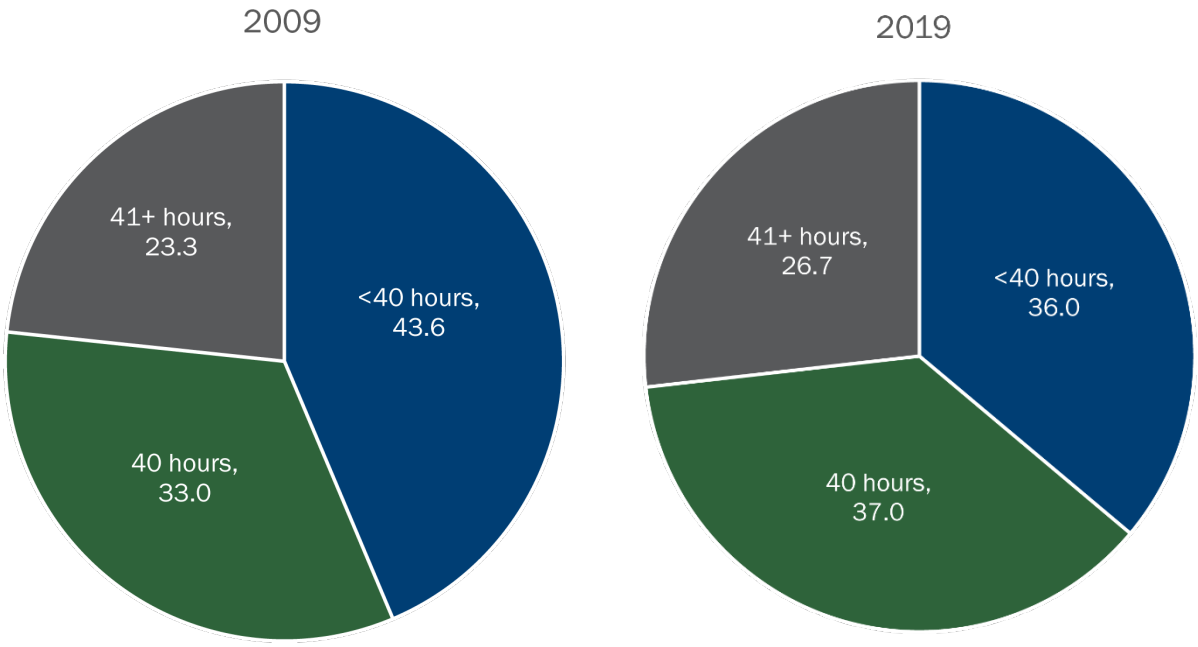
Source: BLS Geographic Profiles of Employment and Unemployment. National data not yet available for 2018 and 2019.

Figure P.3 – Percentage of employed workers in part-time jobs, Montana and the U.S., 2004-2019



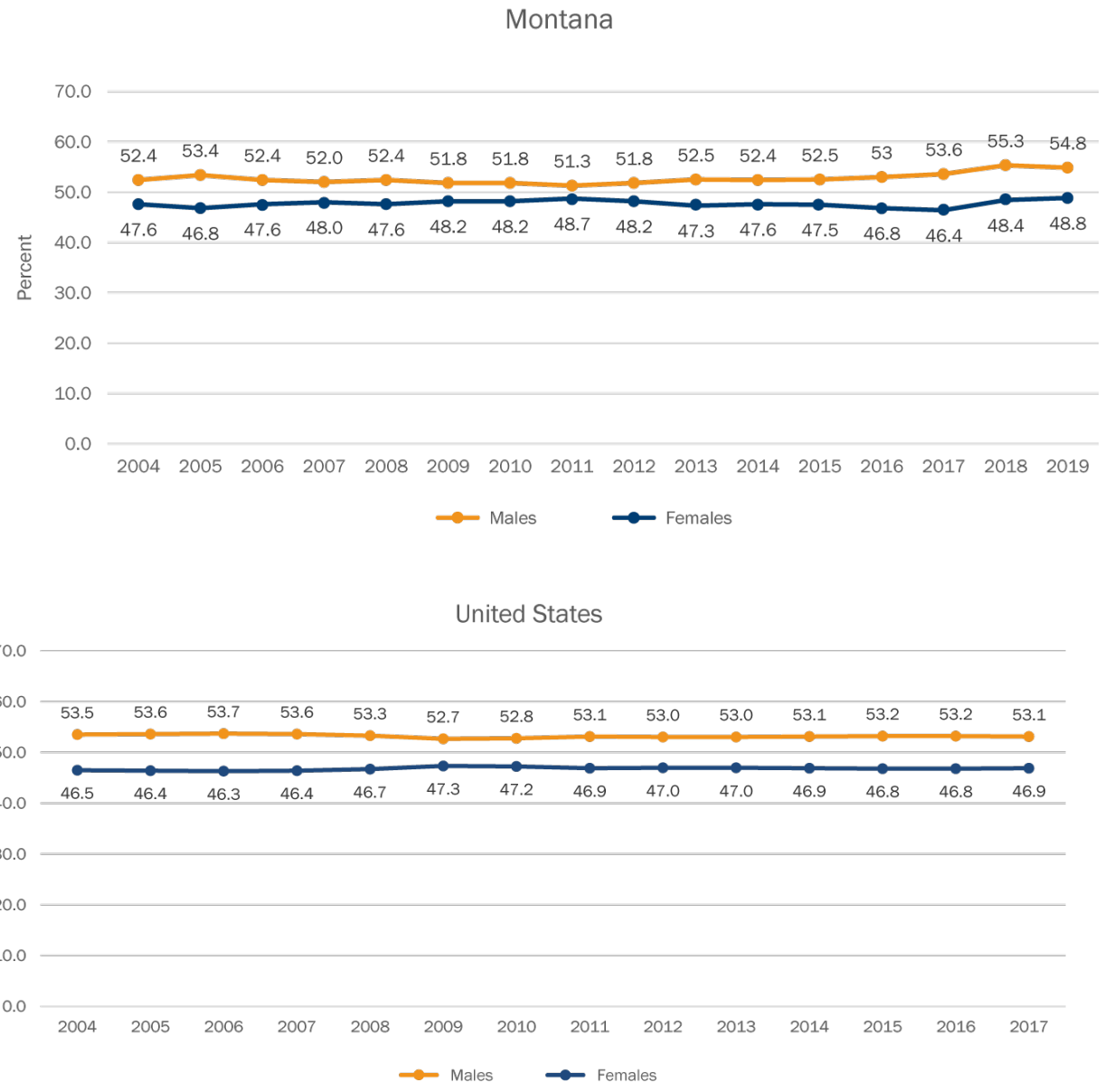
Source: BLS Geographic Profiles of Employment and Unemployment. National data not yet available for 2018 and 2019.

Figure P.4 – Percentage of employed persons by hours worked weekly in Montana, 2009 and 2019



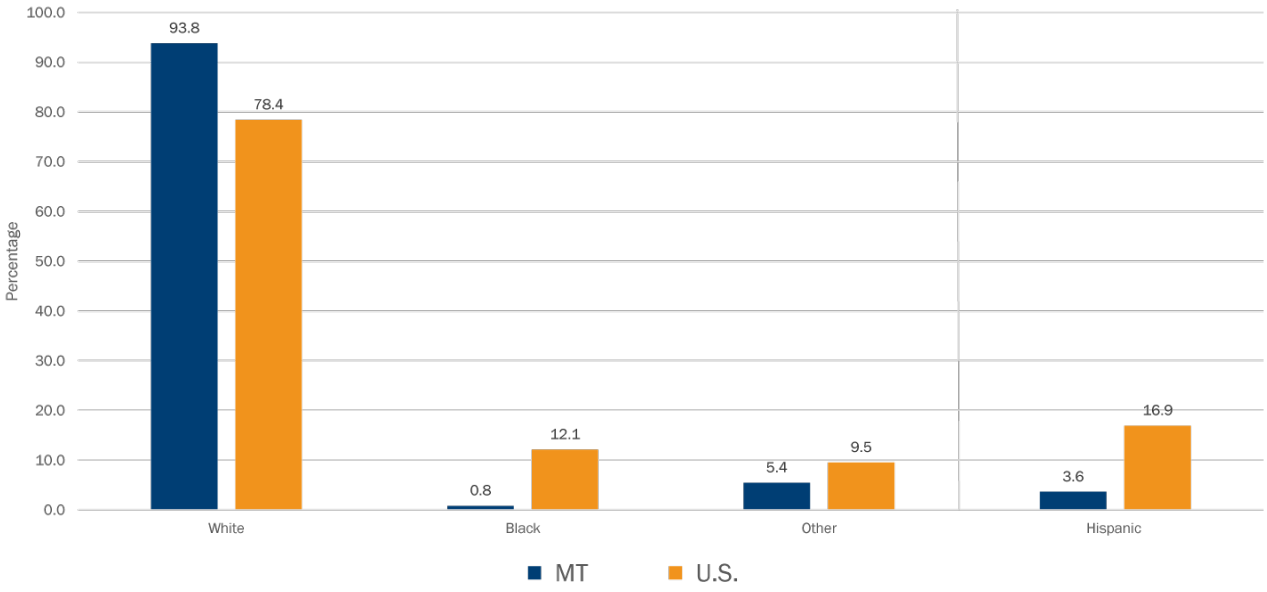
Source: BLS Geographic Profiles of Employment and Unemployment.

Figure P.5 – Percentage of employed workers by sex in Montana (2004-2019) as well as the United States (2004-2017)



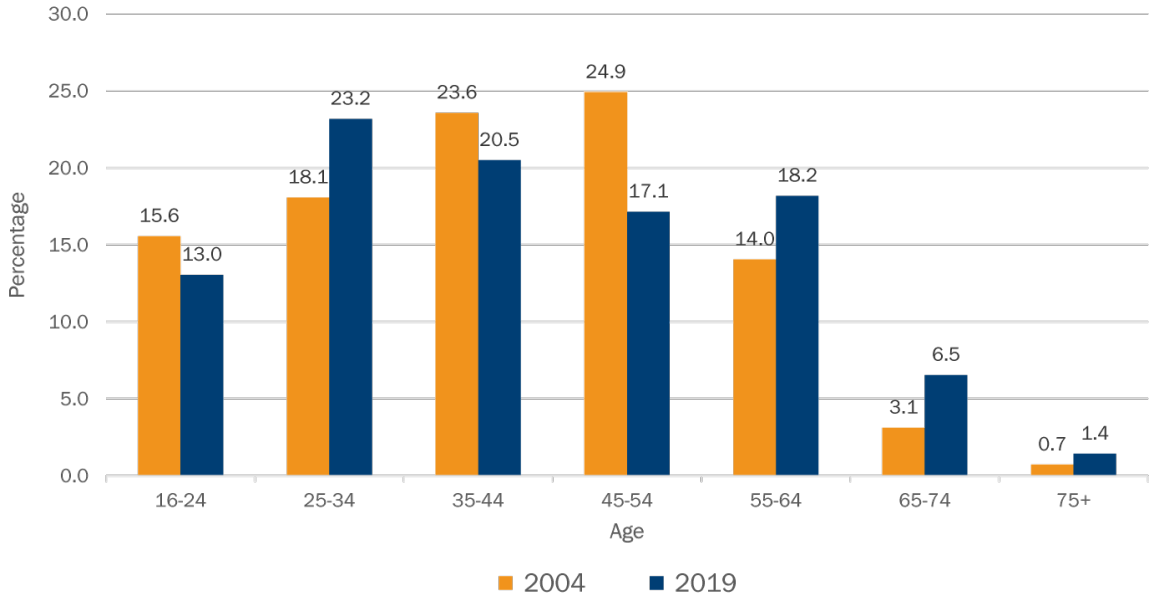
Source: BLS Geographic Profiles of Employment and Unemployment

Figure P.6 – Percentage of employed persons by race and Hispanic origin in Montana and the U.S., 2017



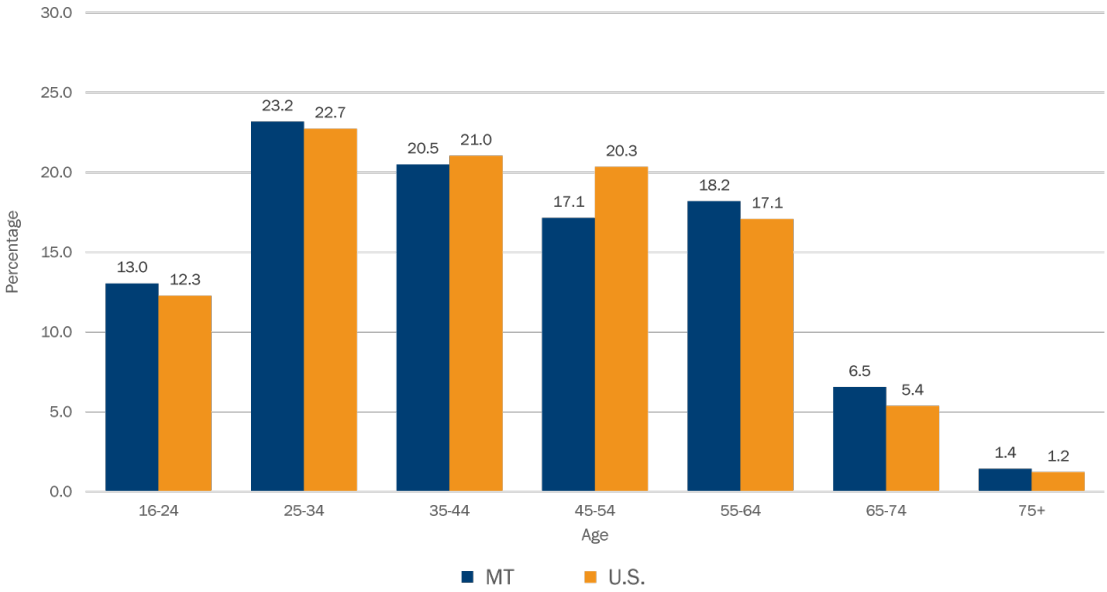
Source: BLS Geographic Profiles of Employment and Unemployment. National data not yet available for 2018 and 2019, so data from 2017 was used to compare Montana and U.S. data for this indicator. The indicator of percentage of employed persons of Hispanic origin is separate from the indicator of percentage by race, designated by a solid vertical line.

Figure P.7 – Percentage of employed persons by age in Montana, 2004 and 2019



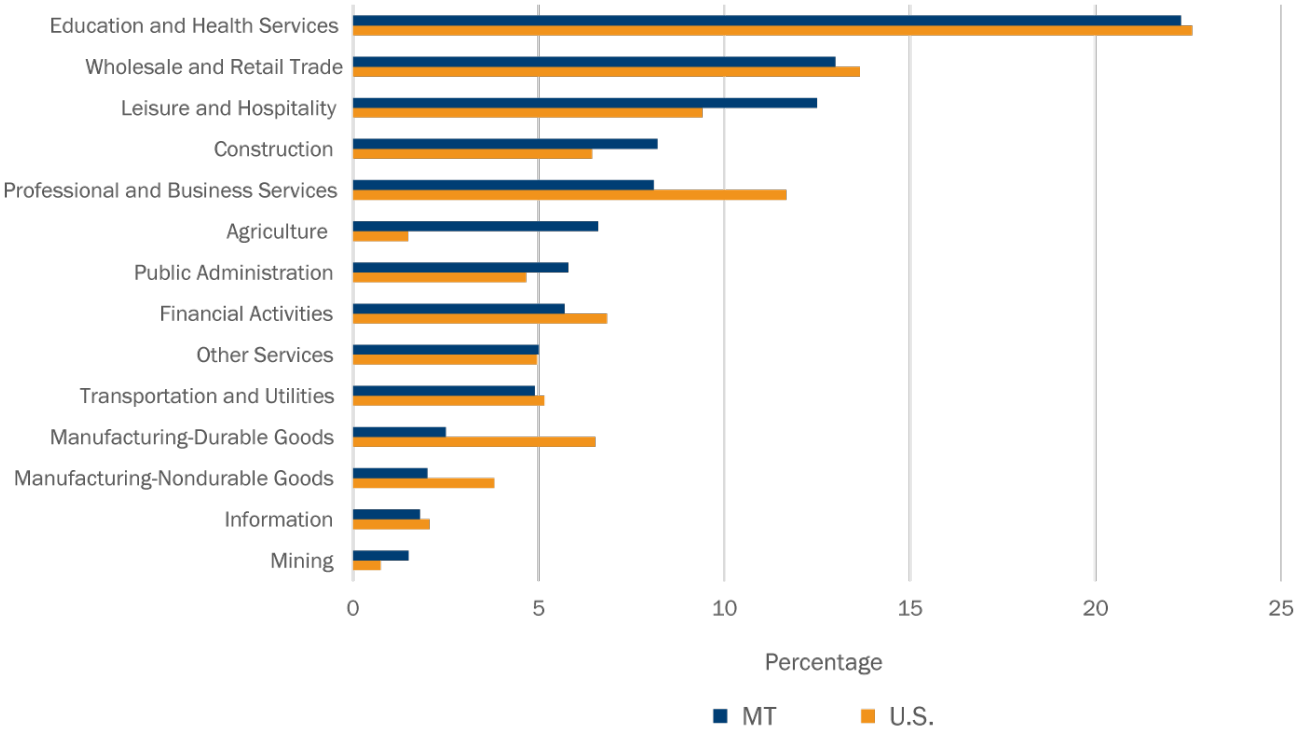
Source: BLS Geographic Profiles of Employment and Unemployment

Figure P.8 – Percentage of employed persons by age in Montana and the U.S., 2019



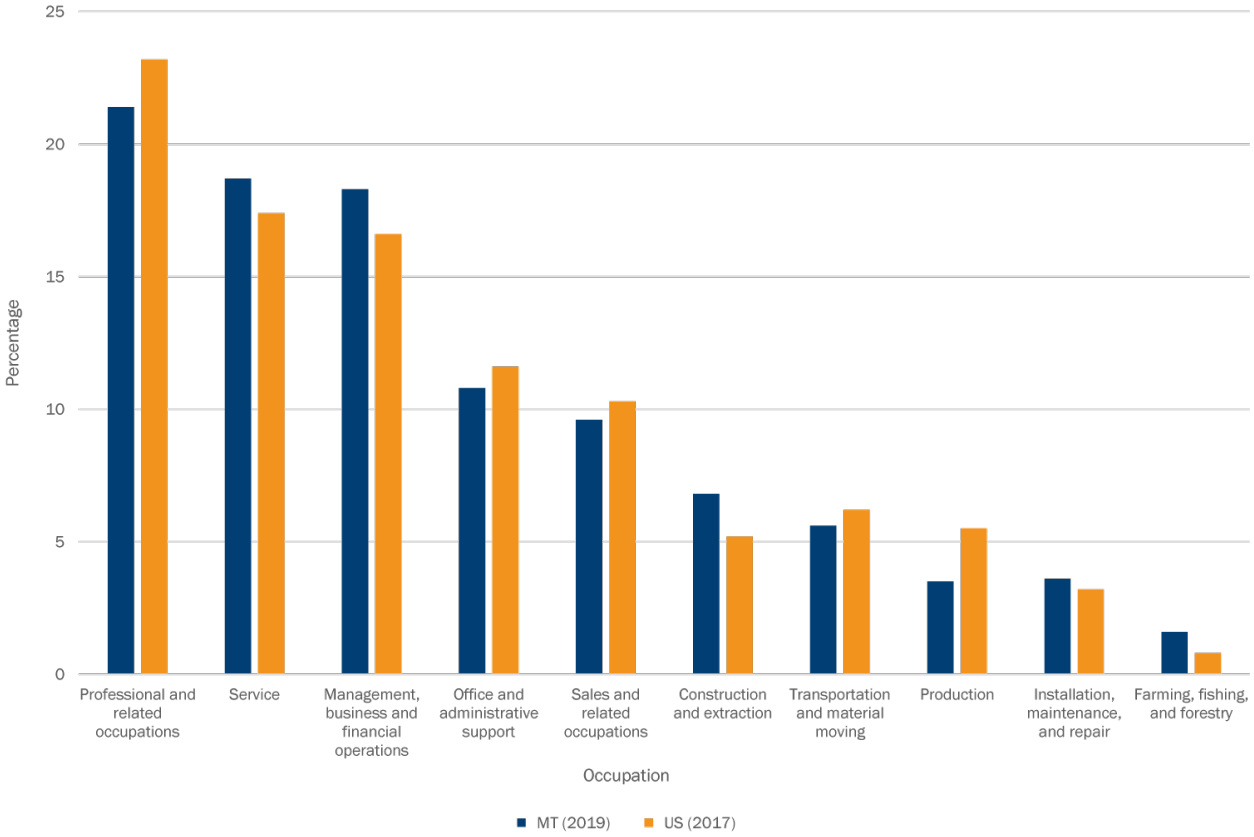
Source: BLS Geographic Profiles of Employment and Unemployment. National data not yet available for 2018 and 2019.

Figure P.9 – Percentage of employed workers by industry, Montana (2019) and the U.S., (2017)



Source: BLS Geographic Profiles of Employment and Unemployment

Figure P.10 – Percentage of employed workers by occupation, Montana (2019) and the U.S (2017)



Source: BLS Geographic Profiles of Employment and Unemployment. National data not yet available for 2018 and 2019

Table P.1 - Top industries and occupations in Montana, 2019

Industry	Percent of Employment	Occupation	Percent of Employment
Education and Health services	21.6	Professional and Related Occupations	21.4
Wholesale and Retail Trade	13.6	Service	18.7
Leisure and Hospitality	10.5	Management, Business and Financial Operations	18.3
Construction	9.4	Office and Administrative Support	10.8
Professional and Business	9.7	Sales and Related occupations	9.6
Agriculture	5.5	Construction and Extraction	6.8
Public Administration	5.7	Transportation and Material Moving	5.2

Source: BLS Geographic Profiles of Employment and Unemployment

Indicator 1: Non-Fatal Work-Related Injuries and Illnesses

Background

Work-related injuries are generally defined as injuries that result from single events, such as falls, being struck, or crushed by objects, electric shocks, or assaults. Work-related illnesses, such as asthma, silicosis, and carpal tunnel syndrome, typically occur as the result of longer-term exposure to hazardous chemicals, physical hazards, or repeated stress or strain at work. Many work-related illnesses take time to develop, and consequently, may not appear until many years after the individual has left employment.

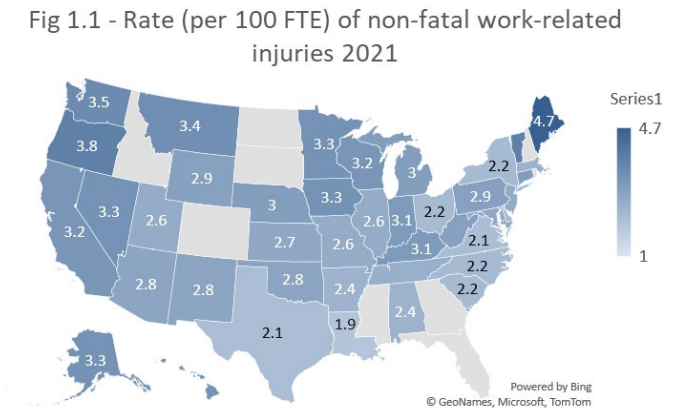
This indicator provides information on the estimated annual incidence and rate of non-fatal work-related injuries and illnesses in Montana and the United States. These details can provide a birds-eye view of injury and illness trends in Montana for policymakers, employers, health professionals, and other stakeholders. Indicator 1 uses data from the U.S. Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses (SOII), which surveys a representative sample of private industry employers. The SOII is not a census of all employers and is subject to sampling error. Military personnel, self-employed workers, federal agencies, and farms with fewer than 11 employees are excluded from the survey. Additionally, survey respondents underreport injuries and illnesses on the OHSA forms, resulting in underestimation of incidence rates of work-related injuries and illnesses in the SOII data. Industry concentration and sample size may differ between states, so it is not accurate to directly compare or divide rates for Montana with national or other state rates.

Results

The incidence rates of non-fatal work-related injuries and illnesses for both the United States and Montana declined from 2004 to 2019, but the incidence rate for Montana has remained considerably higher than the national rate. For example, in 2021, Montana had the 5th highest incidence rate for non-fatal, work-related injuries and illnesses in the United States (Fig. 1.1). This unfortunate fact may be due in part to hazardous working conditions in industries such as agriculture and mining. Although the rate of non-fatal work-related injuries and illnesses seems to be declining, there is still a lot of work to be done to reduce rates of non-fatal injuries and illnesses in Montana's workforce.

Figure 1.1 – States with the highest rate of non-fatal, work-related injuries and illnesses (2021)

State	Rate
Maine	4.7
Oregon	3.8
Vermont	3.8
Washington	3.5
Montana	3.4
Alaska	3.3
Hawaii	3.3
Iowa	3.3
Minnesota	3.3



Source: https://www.bls.gov/charts/injuries-and-illnesses/rate-of-total-recordable-cases-by-state.htm

From 2004 to 2019, in Montana:

- Total annual number of work-related injuries and illnesses dropped from 18,800 to 11,500 cases
- Incidence rate of total annual work-related injuries and illnesses dropped from 7.2 to 3.8 cases per 100 FTE
- Incidence rate of total annual work-related injuries and illnesses involving “days away from work” dropped from 2.3 in 2004 to 1.2 in 2019.
- These rates are substantially higher than the national average (Fig 2.1)

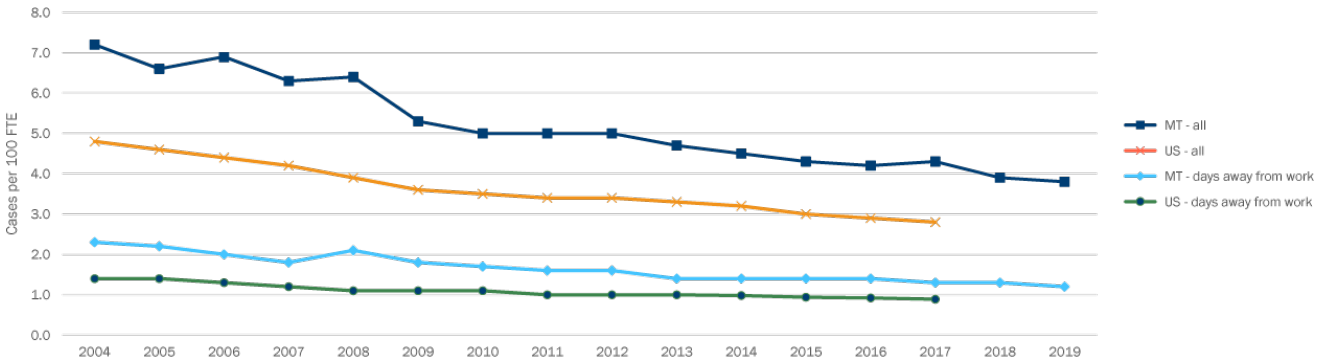
Source: www.bls.gov/iif/home.htm

In Montana, the industries with the highest number of non-fatal work-related injuries and illnesses in 2021 were:

- Service (8,000)
- Trade and transportation (3,400)
- Educational and health services (2,500)
- Goods production (2,400)
- Health care and social assistance (2,400)
- Retail trade (2,200)

Source: www.bls.gov/iif/home.htm

Figure 1.2 – Estimated rates (per 100 FTE) of all cases of non-fatal work-related injuries and illnesses, and those cases with days away from work in Montana and the U.S., 2004-2019 omit the period. On all other Figures there is no period



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

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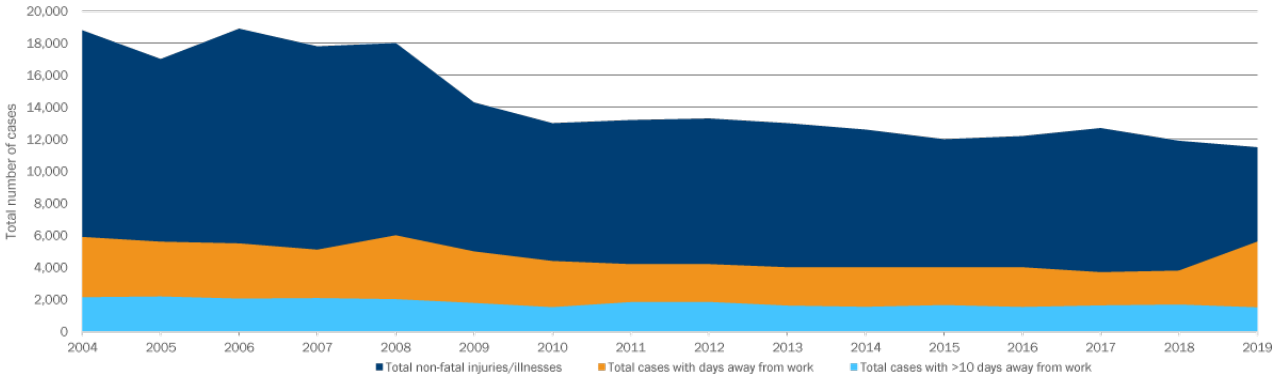
Figure 1.3 – Estimated numbers of all non-fatal work-related injuries and illnesses, cases involving days away from work, and cases involving more than 10 days away from work in Montana, 2004-2019



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

Indicator 2: Work-Related Hospitalizations

Background

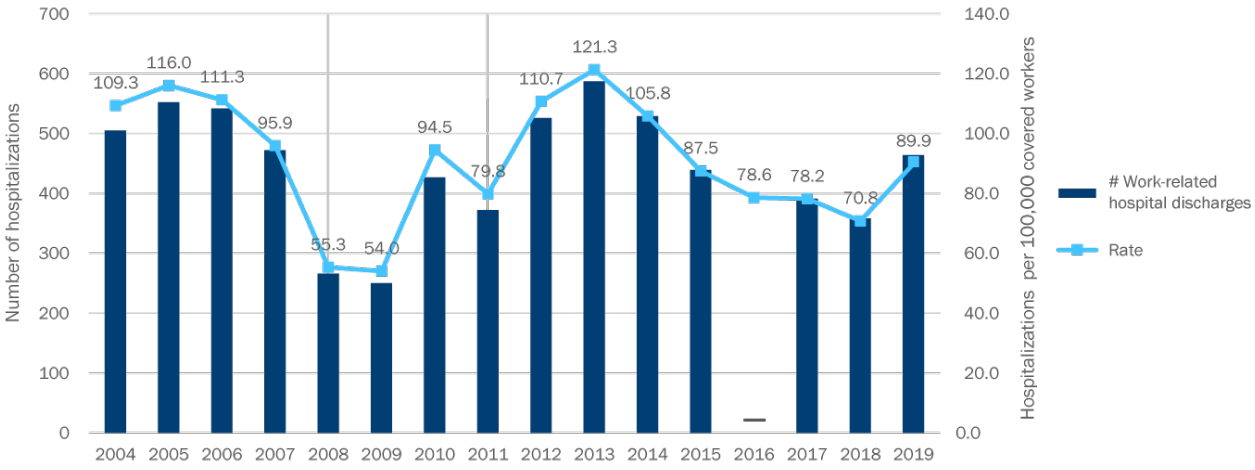
Work-related injuries and illnesses may result in hospitalization for various reasons including observation, stabilization, and treatment. Hospitalization can occur at the time of injury/illness or at a point in the future. These injuries and illnesses are typically more costly and can sometimes result in long-term disability for the worker.

This indicator uses hospital discharge data from the Montana Department of Public Health and Human Services and BLS Current Population Survey (CPS). Hospital discharge data does not provide explicit information about the "work-relatedness" of a condition for which a patient is hospitalized, but the designation of workers' compensation as primary payer for the hospital stay is a good proxy for work-relatedness of the injuries. Attribution of primary payer as workers' compensation in discharge data may not be accurate, and data between states may not be comparable due to the differences in workers' compensation programs. The CPS excludes active-duty members of the military, inmates in institutions, and workers less than 16 years old. Additionally, the CPS data may underestimate percentages for certain worker populations that do not have permanent residents. The Montana Hospital Association (MHA) changed reporting of payer in 2008, and so the numbers of hospitalizations from the periods 2000-2007 and 2012-2014 vs. 2008-2011 are not comparable.

Results

The rate of work-related hospitalizations in Montana remained relatively steady, when the rates are properly compared within the reporting periods. Due to the data reporting change in 2008, the rates for 2008 to 2011 are not comparable due to the rates for the other time periods. However, work-related hospitalizations did increase substantially from 54.0 to 94.5 hospital discharges per 100,000 covered workers from 2009 to 2010. The highest rate of work-related hospitalizations over this 15-year period (121.3) occurred in 2013. Though the rates have declined since then, there was a spike in 2019 (Fig. 2.1).

Figure 2.1 - Number and crude rate (per 100,000 FTE) of work-related hospitalizations in Montana, 2004-2019



Source: Montana hospital discharge data, BLS Current Population Survey (CPS) Montana Hospital Association (MHA) changed reporting of payer in 2008; Numbers of hospitalizations from the periods 2000-2007 and 2012-2014 vs. 2008-2011 are not comparable. Indicated by vertical lines. Data not reported for 2016.

Indicator 3: Fatal Work-Related Injuries

Background

A fatal work-related injury is an injury that occurs at work and results in death. In the past 10 years, more than 5,800 workers died from fatal work-related injuries every year in the United States. Workplace design, workplace processes, work organization, worker characteristics, and other factors may contribute to worker deaths.

This indicator uses data from BLS Census of Fatal Occupational Injuries (CFOI) to examine all worker fatalities in Montana that resulted from traumatic injuries at work. The CFOI collects information on all work-related fatal injuries in the United States, including military personnel and volunteers. Fatalities coming and going from work (commuting) are not counted. Fatalities of military personnel and people younger than 16 years old may be included in the count of fatal work-related injuries but are not included in the denominator of the rate, due to employment statistics collection methods. Additionally, CFOI reports data on work-related fatalities by the state where the fatal incident occurred, which is not necessarily the state of death or the state of residence.

Results

Overall, the work-related fatality rate in Montana dropped from 8.4 to 7.8 fatalities per 100,000 FTE from 2004 to 2019. However, there was not a steady downward trend, as the fatality rates increased and decreased from year to year. The highest fatality rate was 12.0 fatalities per 100,000 FTE in 2009, representing 50 persons killed in work-related injuries. The highest number of fatalities in a single year was in 2007, with 54 persons killed in work-related injuries. Most recently, in 2018 and 2019, the number of worker deaths increased from 28 to 38 fatalities per year. The vast majority of fatal incidents (~86%) occurred in the private industry where transportation incidents accounted for nearly half of the work-related fatalities in Montana from 2004 to 2019 (Fig 3.2). The industries that had the most work-related fatalities in Montana from 2004 to 2019 (Fig 3.3) were agriculture (34.8%), trade, transportation, and utilities (19.6%), construction (13.1%) and government (7.9%).

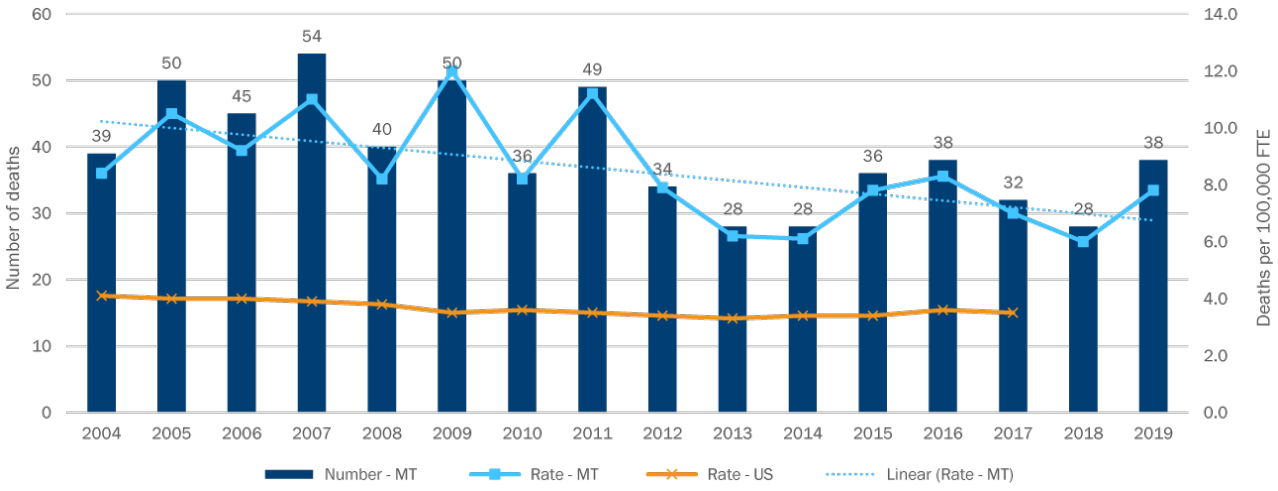
While it is good the work-related fatality rate has consistently declined in Montana from 12.0 fatalities per 100,000 FTE in 2011 to 7.8 in 2019, each worker death is one too many. The work-

related fatality rates are still much higher than the national rates (Fig 3.1). Future actions must address these unacceptably high levels.

There was a total of 38 occupational fatalities in Montana for 2019. Transportation incidents accounted for 19 occupational fatalities in 2019. Exposure to harmful substances/environments led to 5 fatalities as did contact with objects and equipment. Falls, slips and trips accounted for 4 occupational fatalities. The industries with the highest counts of occupational fatalities in 2014 were:

- Trade, transportation, and utilities (19)
- Exposure to harmful substances or environments (5)
- Contact with objects and equipment (5)
- Falls, slips and trips (4)
- Violence and other injuries by persons or animals (4)

Figure 3.1 - Number and rate (per 100,000 FTE) of fatal work-related injuries in Montana and U.S., 2004-2019



Source: www.bls.gov/iif/oshstate.htm

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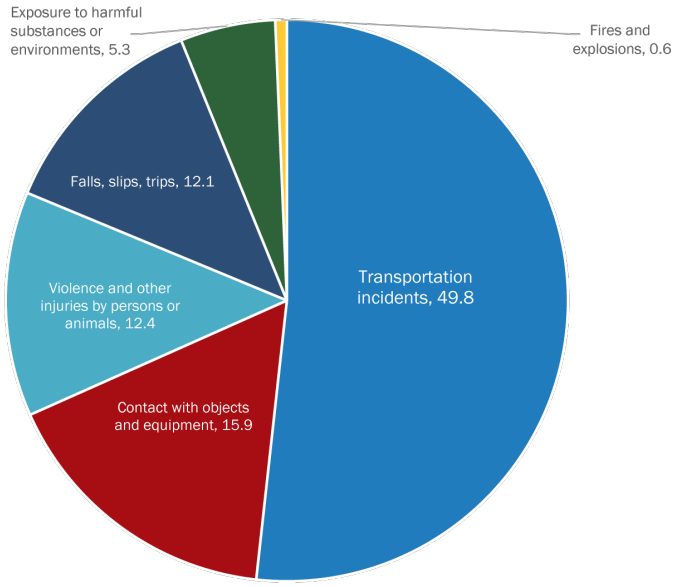
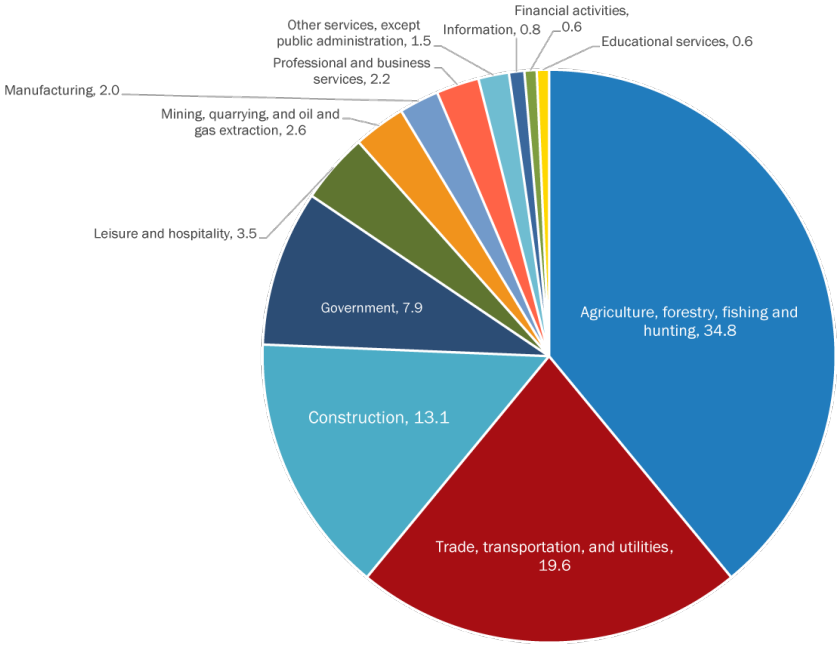
Figure 3.2 – Percentage of fatal work-related injuries by event or exposure in Montana, 2004-2019



Source: injuryfacts.nsc.org/state-data/at-work/work-deaths-by-state

Figure 3.3 – Percentage of fatal work-related injuries by industry in Montana, 2004-2019



Source: injuryfacts.nsc.org/state-data/at-work/work-deaths-by-state

Indicator 4: Work-Related Amputations Reported by Employers

Background

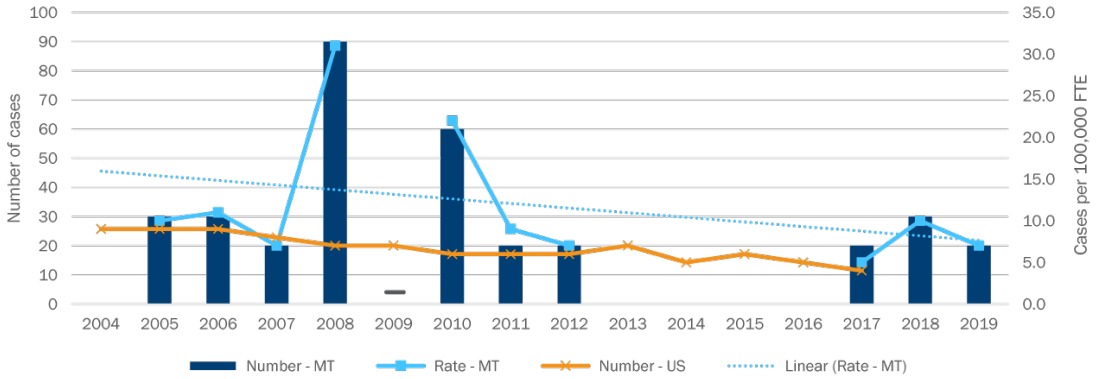
An amputation is defined as full or partial loss of a protruding body part – an arm, hand, finger, leg, foot, toe, ear, or nose. Work-related amputations involving at least one day away from work are injuries that may significantly impact a worker's capability to perform their job at the time of injury, maintain or increase earnings, and participate in other activities. In 2018, approximately 6,200 workers experienced work-related amputations in the private sector in the United States, and about 95% of those amputations involved damage to the wrist, hand, or finger. Montana saw a massive increase in work-related amputations in 2008, but the overall rate has been trending downward since then (Fig 4.1).

Indicator 4 uses data from the U.S. Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses (SOII) to examine cases of amputations reported by employers. The annual SOII surveys a representative sample of private industry employers. The SOII is not a census of all employers and is subject to sampling error. Military personnel, self-employed workers, federal agencies, and farms with fewer than 11 employees are excluded from the survey. Additionally, survey respondents underreport injuries and illnesses on the OHSA forms, resulting in underestimation of incidence rates of work-related injuries and illnesses in the SOII data. Industry concentration and sample size may differ between states, so it is not accurate to directly compare or divide rates for Montana with national or other state rates.

Results

In 2008 and 2010, the rate of work-related amputations reported by employers in Montana was much higher than the national rate. The BLS data shows an increase from 20 cases in 2007 to 90 cases in 2008 and 60 cases in 2010. This difference could be caused by underreporting by employers in the other years or by sampling error in the SOII survey during that time period. Due to the lack of data on amputations reported by employers in 2009, it is difficult to determine a possible pattern for the counts and rates in Montana. If the count and rate of amputations in 2009 was similarly high as in 2008 and 2010, then it is possible that there was indeed a much higher increase in work-related amputations during this time in Montana, rather than being an artifact of the survey data. However, the data on work-related amputations for Indicator 5 (be consistent through out, either add the # or keep it out) does not seem to substantiate this increase in amputations during that time period. The rate of work-related amputations reported by employers in Montana was similar to the national rates in 2005, 2006, 200, 2011, 2012, and 2017 (Fig 4.1).

Figure 4.1 – Estimated number and incidence rate (per 100,000 FTE) of work-related amputations involving days away from work in Montana and U.S., 2004-2019



Source: BLS Survey of Occupational Injuries and Illnesses (SOII), BLS Current Population Survey (CPS)National data for this indicator was not available for 2018 and 2019. State data not collected 2013-2016

Indicator 5: Amputations Identified in Workers' Compensation System

Background

An amputation is defined as full or partial loss of a protruding body part – an arm, hand, finger, leg, foot, toe, nose, or ear. An amputation may greatly reduce a worker's job skills, earning potential, and quality of life. For this indicator, amputation cases were limited to amputations identified through "lost-time" claims in the workers' compensation system (missed >4 days away from work).

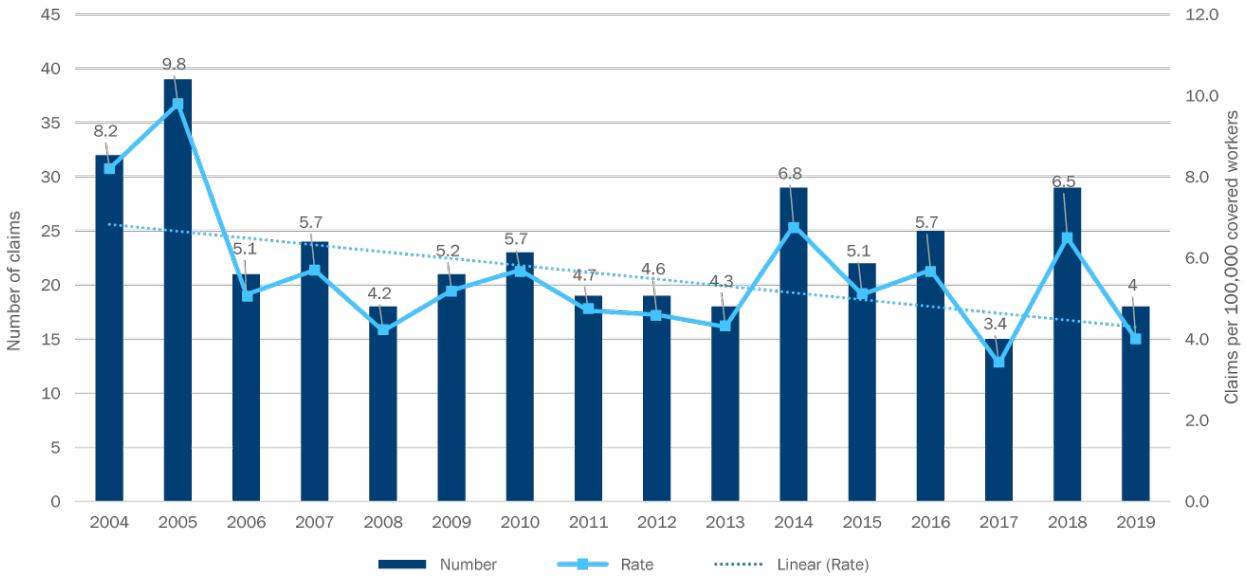
Indicator 5 uses data from the Montana Department of Labor & Industry's Worker Compensation Administration Network (WCAN) and the National Academy of Social Insurance (NASI). WCAN data gives the number of amputation claims in Montana, and NASI data provides the total number of workers covered by workers' compensation in the state.

Montana's workers' compensation system requires insurance carriers or their representatives to report all work-related injuries to the Department of Labor & Industry. Reporting follows national standard developed by the International Association of Industrial Accident Boards and Commissions (IAIABC). The waiting period for eligibility for workers' compensation wage-loss benefits is four days or 32 hours in Montana. Work-related amputations may be underestimated when using workers' compensation data because many individuals with work-related injuries and illnesses do not file for workers' compensation. Workers' compensation claims may be denied. Additionally, federal employees and self-employed individuals, such as farmers and independent contractors, are not covered by Montana's workers' compensation system.

Results

In Montana, the incidence rate of amputations with lost worktime decreased from 8.2 to 4.0 amputations per 100,000 workers from 2004 to 2019. In 2005, there were 39 amputations with lost worktime in Montana, and this count decreased to only 18 amputations in 2019.

Figure 5.1 – Number and rate of amputations with lost worktime filed with workers' compensation in Montana, 2004-2019



Source: Montana Workers' Compensation Network (WCAN), National Academy of Social Insurance (NASI).

Indicator 6: Hospitalizations for Work-Related Burns

Background

Hospitalizations for work-related burns includes injuries to tissues caused by contact with heat (fire or steam), chemicals, electricity, friction, or radiation.[1] Burns are extremely expensive to treat and can result in significant disability. Thermal and chemical burns are the most frequent types of work-related burns in the United States, and mostburns affect the upper extremities. Welders, cooks, laborers, food service workers, and mechanics generally have the highest rates of burn injury in the United States.

This indicator uses hospital discharge data from the Montana Department of Public Health and Human Services and BLS Current Population Survey (CPS). Hospital discharge data does not provide explicit information about the "work-relatedness" of a condition for which a patient is hospitalized, but the designation of workers' compensation as primary payer for the hospital stay is a good proxy for work-relatedness of the injuries. Attribution of primary payer as workers' compensation in discharge data may not be accurate, and data between states may not be comparable due to the differences in workers' compensation programs. The CPS excludes active-duty members of the military, inmates in institutions, and workers less than 16 years old. Additionally, the CPS data may underestimate percentages for certain worker populations that do not have permanent residents. The Montana Hospital Association (MHA) changed reporting of payer in 2008, and so the numbers of hospitalizations from the periods 2000-2007 and 2012-2014 vs. 2008-2011 are not comparable.

Results

Montana Hospital Association (MHA) changed reporting of payer in 2008; Numbers of hospitalizations from the periods 2000-2007 and 2012-2014 vs. 2008-2011 are not comparable. Due to the changes in reporting, the number and rates of cases are not comparable across all years. However, the number of hospitalizations for work-related burns was very low ever year from 2004 to 2014, and never exceeded 6 hospitalizations a year.

All years had less than 5 cases of work-related burn hospitalizations, except for:

- 2004 = 5 cases (Annual rate = 1.1 per 100,000 FTE)
- 2013 = 6 cases (Annual rate = 1.2 per 100,000 FTE)
- 2014 = 2 cases (Annual rate = 0.4 per 100,000 FTE)

Source: Montana Dept. of Public Health and Human Services (DPHHS) hospital discharge data, BLS Current Population Survey (CPS)

Indicator 7: Work-Related Musculoskeletal Disorders

Background

Musculoskeletal disorders (MSDs) affect the body's muscles, joints, tendons, nerves, and ligaments. Most work-related MSDs develop over time and significantly impact the ability of workers to continue performing their everyday duties effectively. Work activities that usually contribute to MSDs include repetitive motion, awkward body movement, bending and twisting, handling of equipment that vibrates, and lifting heavy objects. Low back MSDs are associated with work-related lifting and forceful movements.

MSDs are some of the most common and costly work-related health problems in the U.S. Nationally, MSDs consistently account for over 33% of all work-related injuries and illnesses involving days away from work reported by employers over the last decade.

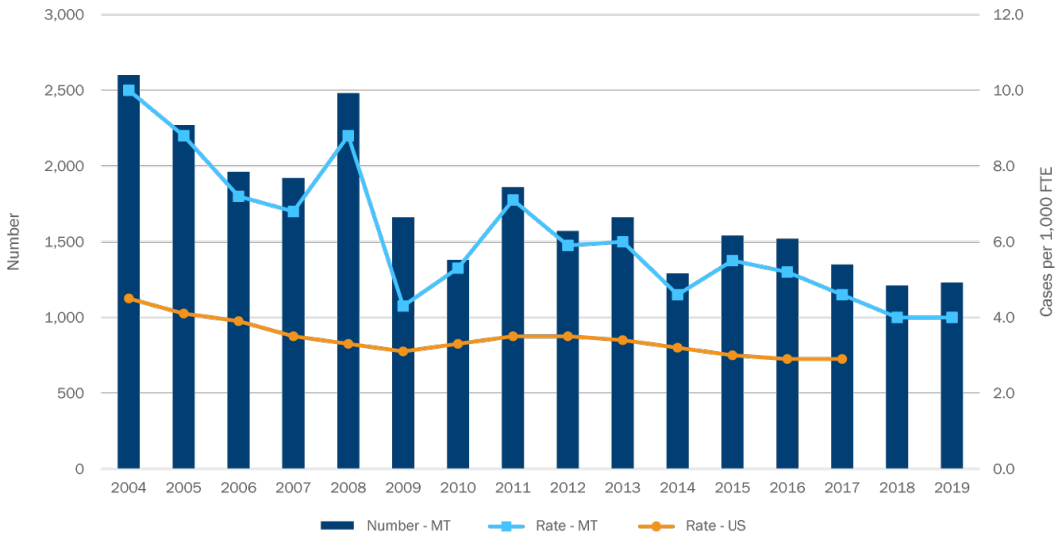
Indicator 7 examines cases of MSDs involving days away from work by using data from the U.S. Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses (SOII), which surveys a representative sample of private industry employers. The SOII is not a census of all employers and is subject to sampling error. Military personnel, self-employed workers, federal agencies, and farms with fewer than 11 employees are excluded from the survey. Additionally, survey respondents underreport injuries and illnesses on the OHSA forms, resulting in underestimation of incidence rates of work-related injuries and illnesses in the SOII data. Industry concentration and sample size may differ between states, and caution should be taken when comparing rates for Montana to national or state rates based on SOII data.

Results

Note: Caution should be taken when comparing rates for Montana to national or state rates. Some differences in these rates can be attributed to differences in industry concentration or sample size between states.

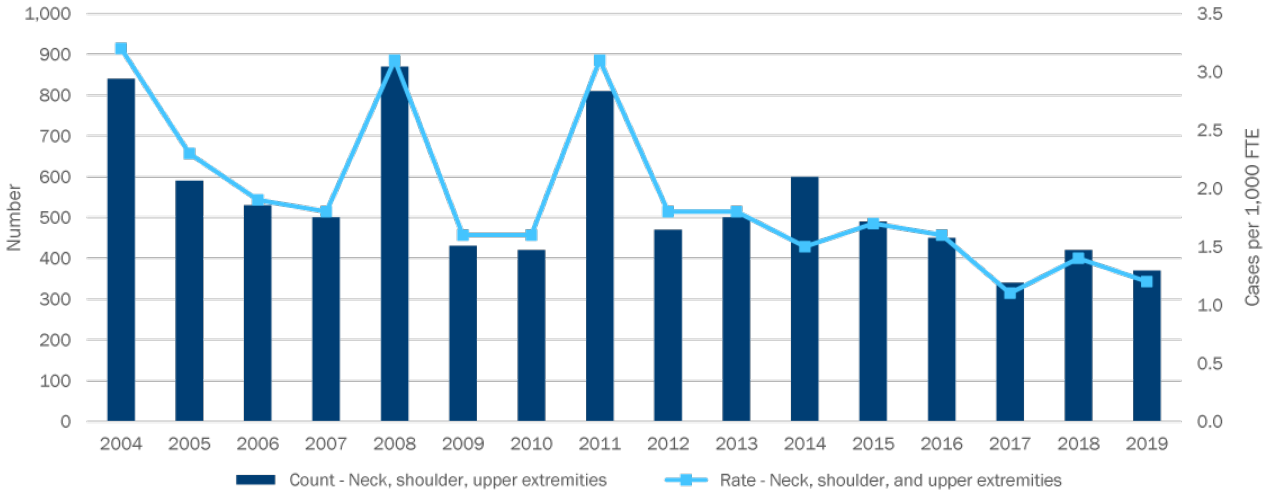
Overall, Montana workers saw a decrease in MSDs involving days away from work from 2004 to 2019, with the incidence rate decreasing from 10 to 4.0 cases per 1,000 FTE. There were 2,600 MSD cases involving days away from work in 2004, which decreased to 1,230 cases in 2019. The overall trend demonstrated a decrease in MSDs, but there was a noticeable increase in MSD cases involving days away from work in 2008, and, to a lesser extent in 2011.These increases in 2008 and 2011 appear to be attributable to disorders of the back, neck, and upper extremities, rather than carpal tunnel syndrome. Trends in carpal tunnel syndrome involving days away from work reflected a trend in the opposite direction: rates of cases were lowest from 2007 to 2009, but increased sharply in 2010, 2011, and again in 2013. The years 2017-2019 saw a dramatic decrease in the number and rate of carpal tunnel cases which now approximates the national average (Fig 7.4).

Figure 7.1 – Estimated number and incidence rate (per 1,000 FTE) of all MSD cases involving days away from work in Montana and U.S., 2004-2019



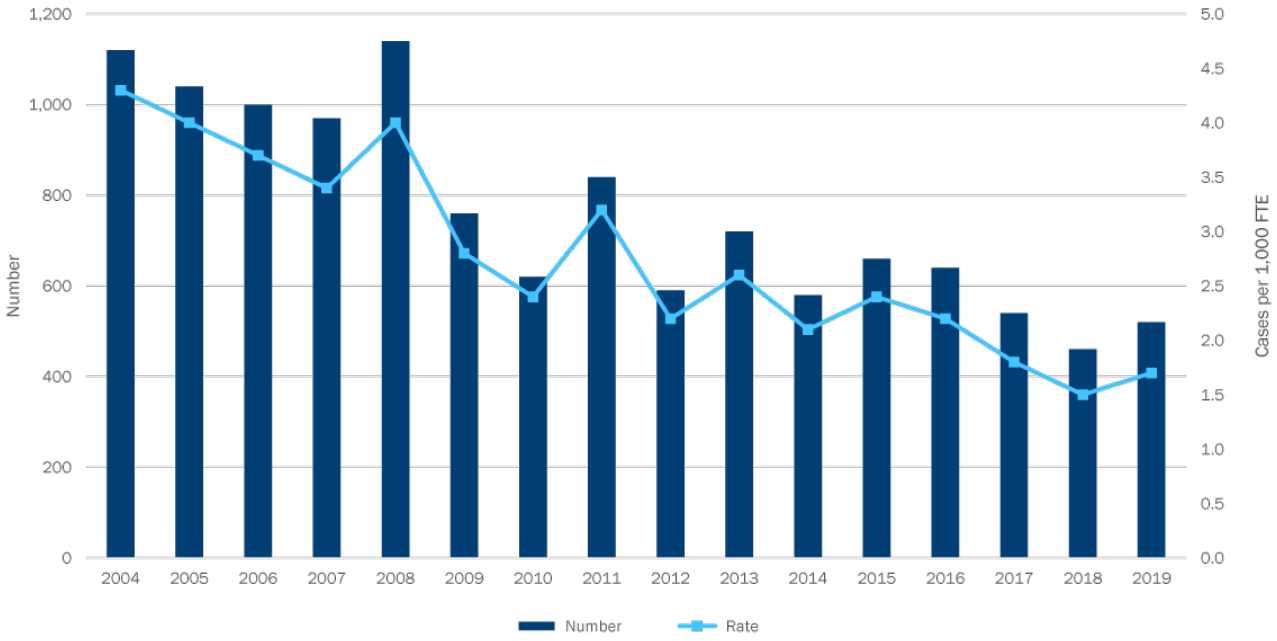
Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

Figure 7.2 – Estimated number and incidence rate (per 1,000 FTE) of MSD cases of the neck, shoulder, and upper extremities involving days away from work in Montana, 2004-2019



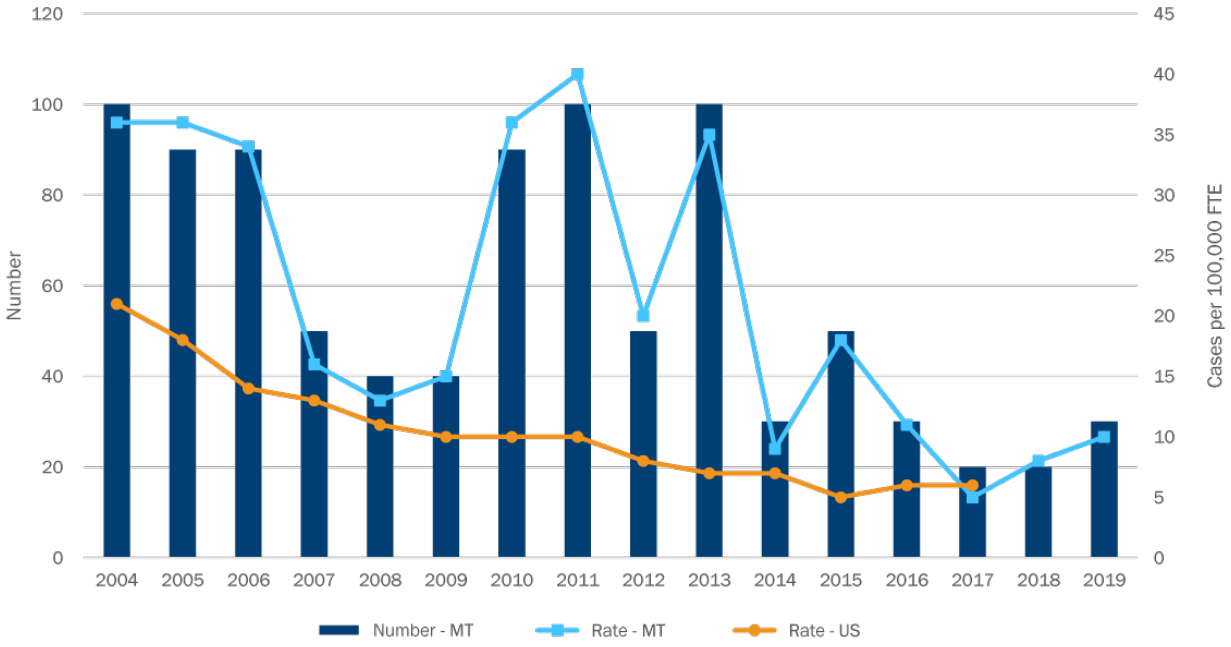
Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

Figure 7.3 – Estimated number and incidence rate (per 1,000 FTE) of MSD cases of the back involving days away from work in Montana, 2004-2019



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

Figure 7.4 – Estimated number and incidence rate (per 100,000 FTE) of carpal tunnel syndrome cases involving days away from work, Montana, 2004-2019



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

Indicator 8: Workers' Compensation Claims for Carpal Tunnel Syndrome

Background

Carpal tunnel syndrome (CTS) occurs when nerves in the hand or wrist are compressed. Contributing workplace factors include direct trauma, repetitive forceful motions, awkward hand postures, use of vibrating tools or equipment. Carpal tunnel syndrome has the longest average disability duration among the top ten workers' compensation conditions in the United States.

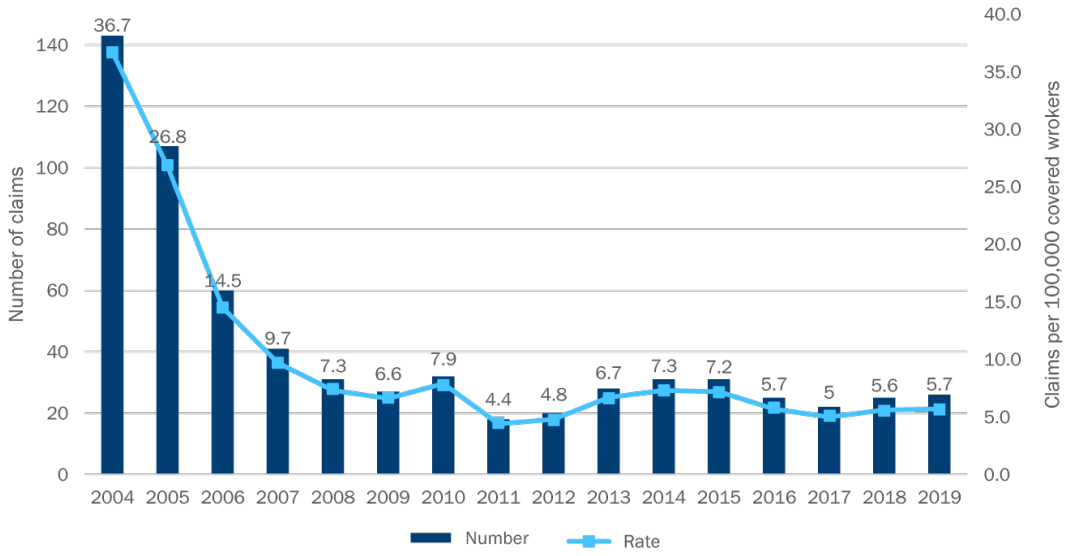
Indicator 8 uses data from the Montana Department of Labor & Industry's Worker Compensation Administration Network (WCAN) and the National Academy of Social Insurance (NASI). WCAN data gives the number of carpal tunnel syndrome claims in Montana, and NASI data provides the total number of workers covered by workers' compensation in the state. "Lost work-time" for workers' compensation claims data was defined as missing more than four days away from work.

Montana's workers' compensation system requires insurance carriers or their representatives to report all work-related injuries to the Department of Labor & Industry. Reporting follows national standard developed by the International Association of Industrial Accident Boards and Commissions (IAIABC). The waiting period for eligibility for workers' compensation wage-loss benefits in Montana is four days or 32 hours. Work-related amputations may be underestimated when using workers' compensation data because many individuals with work-related injuries and illnesses do not file for workers' compensation. Workers' compensation claims may be denied. Additionally, federal employees and self-employed individuals, such as farmers and independent contractors, are not covered by Montana's workers' compensation system.

Results

Carpal tunnel syndrome cases filed with workers' compensation have declined significantly in Montana from 2004 to 2019, from a rate of 36.7 to 5.7 cases per 100,000 workers covered. This steady decline in rates of carpal tunnel syndrome in Montana could result from increased awareness and prevention efforts over the years, with a focus on stretching and exercising the wrist, hand, and fingers, combined with better ergonomics in the workplace.

Figure 8.1 - Number and incidence rate (per 100,000 workers covered) of carpal tunnel syndrome cases involving lost worktime filed with workers' compensation in Montana, 2004-2019



Source: BLS Survey of Occupational Injuries and Illnesses (SOII)

Indicator 9: Hospitalizations from or with Pneumoconiosis

Background

Pneumoconiosis is a chronic lung disease caused by inhalation of dust or particulate matter, most often found in miners. Most cases of pneumoconiosis develop after many years of cumulative exposure and are more prevalent in older individuals long after the onset of exposure. Pneumoconiosis includes silicosis, asbestosis, coal workers' pneumoconiosis (CWP), and, less commonly, pneumoconiosis due to a variety of other mineral dusts, such as talc, aluminum, bauxite, and graphite. All these diseases are ultimately incurable. Complications of pneumoconiosis can result in cancer, tuberculosis, autoimmune conditions, and chronic renal failure. Nearly all pneumoconiosis cases are attributable to occupational exposures. Good ventilation and use of protective equipment in the work environment can help curb the onset of pneumoconiosis.

Indicator 9 uses hospital discharge data from the Montana Department of Public Health and Human Services to examine hospitalizations from or with pneumoconiosis. State population estimates from the U.S. Census Bureau and the Year 2000 U.S. standard population are used to calculate rates. Even though only a small number of people with pneumoconiosis are hospitalized for this condition, the discharge data provides useful population-based surveillance data for quantifying the burden of pneumoconiosis in the population of Montana. Pneumoconiosis has a long latency between exposure and onset of disease, so the state where the individual was exposed may not be the same as the state where the individual was diagnosed.

Results

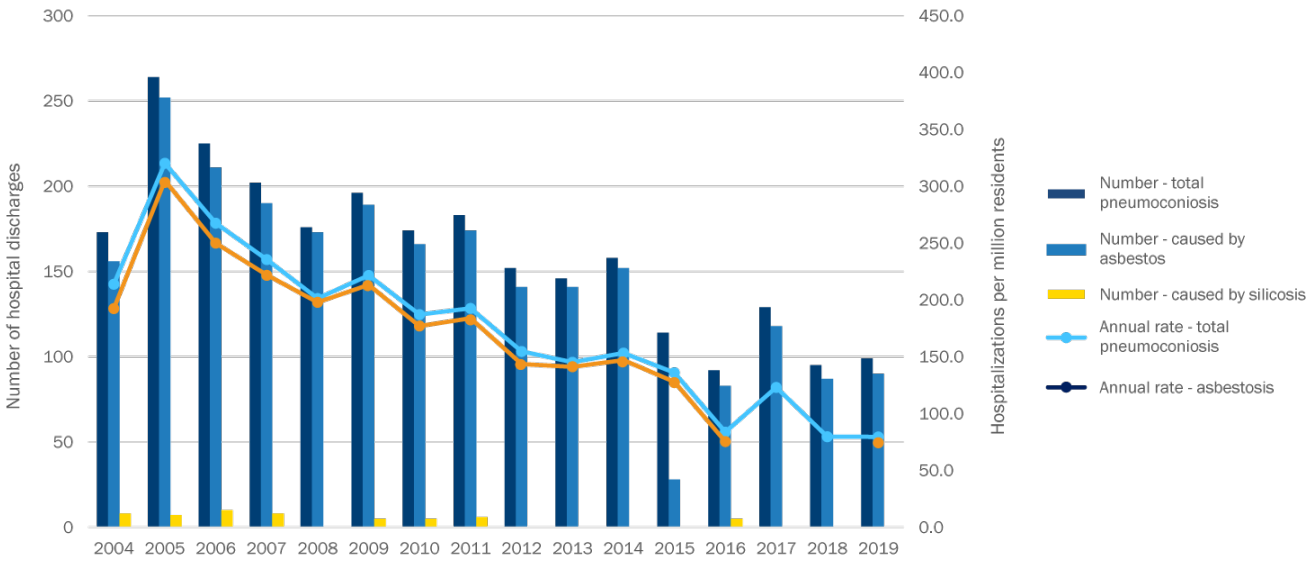
In Montana, 99 cases of hospitalizations for pneumoconiosis were reported in 2019, translating into a rate of 79.5 hospitalizations per million residents. This is a significant reduction from a rate of 213.8 in 2004. The rate of hospitalizations from or with pneumoconiosis steadily declined from 2005 to 2019, with the highest rate occurring in 2005 (320.2 hospitalizations per million residents, 264 cases).From 2004 to 2019, the main cause of hospitalization from or with pneumoconiosis was exposure to asbestos. Hospitalizations for pneumoconiosis may be underreported due to the difficult nature of pinpointing symptoms directly to pneumoconiosis.

Table 9.1 – Number of pneumoconiosis hospitalizations by type of pneumoconiosis, Montana, 2004-2019

Hospital Discharge Type	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Pneumoconiosis (total)	173	264	225	202	176	196	174	183	152	146	158	114	92	129	95	99
Asbestosis	156	252	211	190	173	189	166	174	141	141	152	28	83	118	87	90
Coal Workers' Pneumoconiosis	9	<5	<5	<5	<5	<5	<5	<5	5	<5	<5	<5	<5	5	7	8
Silicosis	8	7	10	8	<5	5	5	6	<5	<5	<5	<5	5	<5	<5	<5
Other and unspecified pneumoconiosis	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0	5	<5	<5

Source: Montana DPHHS hospital discharge data. Numbers were not provided for case counts less than 5 (<5).

Figure 9.1 – Number and age-standardized rates (per million residents) of pneumoconiosis hospitalizations by type of pneumoconiosis, Montana, 2004-2019



Source: Montana DPHHS hospital discharge data, U.S. Census Bureau population estimates

If there are less than 5 cases, the number may be too small to produce reliable estimates or may violate confidentiality requirements. Rates should not be calculated for counts less than 5 events. Indicators based on MT DPHHS personal health information data with counts <20 cases should be interpreted with the understanding that these rates could be imprecise, based on DPHHS publication guidelines.

Indicator 10: Mortality from or with Pneumoconiosis

Background

Pneumoconiosis is a chronic lung disease, caused by inhalation of dust or particulate matter, most often found in miners. Most cases of pneumoconiosis develop after many years of cumulative exposure and are more prevalent in older individuals, long after the onset of exposure.

Pneumoconiosis includes silicosis, asbestosis, coal workers' pneumoconiosis (CWP), and, less commonly, pneumoconiosis due to a variety of other mineral dusts, such as talc, aluminum, bauxite, and graphite. All of these diseases are ultimately incurable.

Indicator 10 uses data from death certificate records from the Montana Office of Vital Records to examine deaths with pneumoconiosis as an underlying or contributing cause of death. State population estimates from the U.S. Census Bureau and the Year 2000 standard population are used to calculate rates. Deaths due to pneumoconiosis are usually underreported because of a lack of recording and clinical recognition due to latency and difficult diagnosis and identification of symptoms. Causes of death listed on the death certificate and coding of those causes may be inaccurate. Death certificates identify only a small percentage of the individuals who develop pneumoconiosis from occupational exposures. An additional limitation of the data is that the state of residence upon death may not be the state of exposure.

Results

In Montana, the Department of Public Health and Human Services collected death certificate information on underlying and contributing causes of death. In 2019, there were 19 reported deaths due to pneumoconiosis, with an annual mortality rate of 21.6 deaths per million residents. Most deaths from pneumoconiosis in Montana were due to exposure to asbestos.

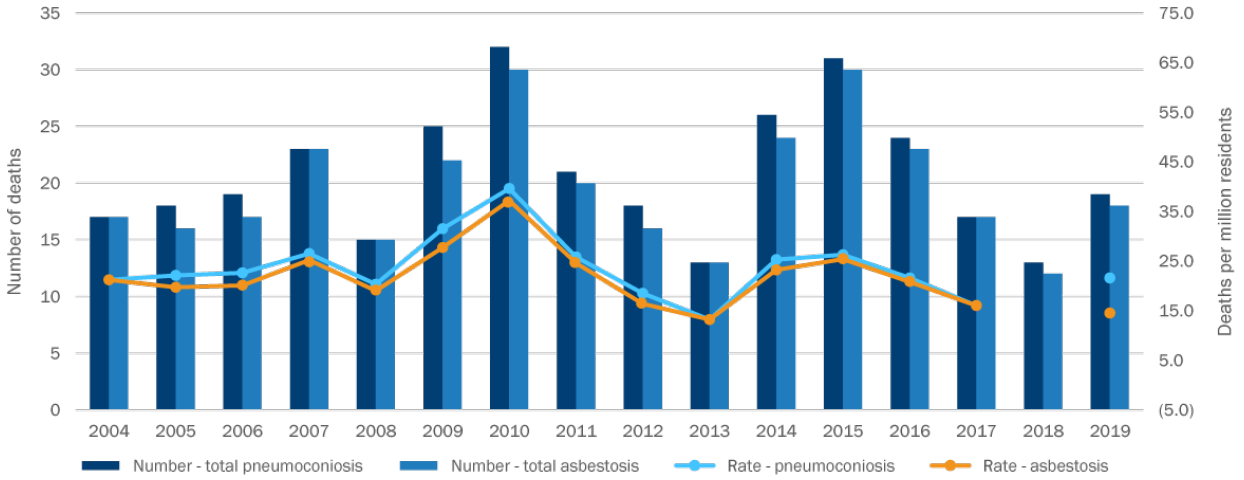
Table 10.1 – Number of deaths from pneumoconiosis by type of pneumoconiosis, Montana, 2004-2019

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Pneumoconiosis (total)	17	18	19	23	15	25	32	21	18	13	26	31	24	17	13	19
Asbestosis	17	16	17	23	15	22	30	20	16	13	24	30	23	17	12	18
Coal Workers' Pneumoconiosis	<5	<5	<5	<5	<5	<5	<5	<5	< 5	0	0	0	0	0	0	0
Silicosis	<5	<5	<5	<5	<5	<5	<5	<5	< 5	0	<5	<5	<5	0	0	0
Other and unspecified pneumoconiosis	<5	<5	<5	<5	<5	<5	<5	<5	< 5	0	0	<5	0	0	<5	1

Source: Montana Department of Public Health and Human Services Office of Vital Records

If there are less than 5 cases, the number may be too small to produce reliable estimates or may violate confidentiality requirements. Rates should not be calculated for counts less than 5 events. Indicators based on MT DPHHS personal health information data with counts <20 cases should be interpreted with the understanding that these rates could be imprecise, based on DPHHS publication guidelines.

Figure 10.1 - Number and age-standardized rates (per million residents) of total pneumoconiosis deaths and asbestosis deaths in Montana, 2004-2019



Source: Montana Department of Public Health and Human Services Office of Vital Records

Data used to calculate age-standardized rates was not available in 2014.

If there are less than 5 cases, the number may be too small to produce reliable estimates or may violate confidentiality requirements. Rates should not be calculated for counts less than 5 events. Indicators based on MT DPHHS personal health information data with counts <20 cases should be interpreted with the understanding that these rates could be imprecise, based on DPHHS publication guidelines.

Indicator 11: Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers

Background

A pesticide is a substance or mixture of substances used to prevent or control undesired insects, plants, animals, or fungi. An estimated one billion pounds of pesticides are used each year in the United States, containing more than 16,000 different compounds. Pesticides protect the food supply and control disease vectors, but pesticides also present adverse health effects if used heavily or over extended periods of time. Agricultural workers and those applying pesticides have the highest risk of severe pesticide poisoning. The Environmental Protection Agency (EPA) estimates that 20,000 to 40,000 work-related pesticide poisoning cases occur yearly.

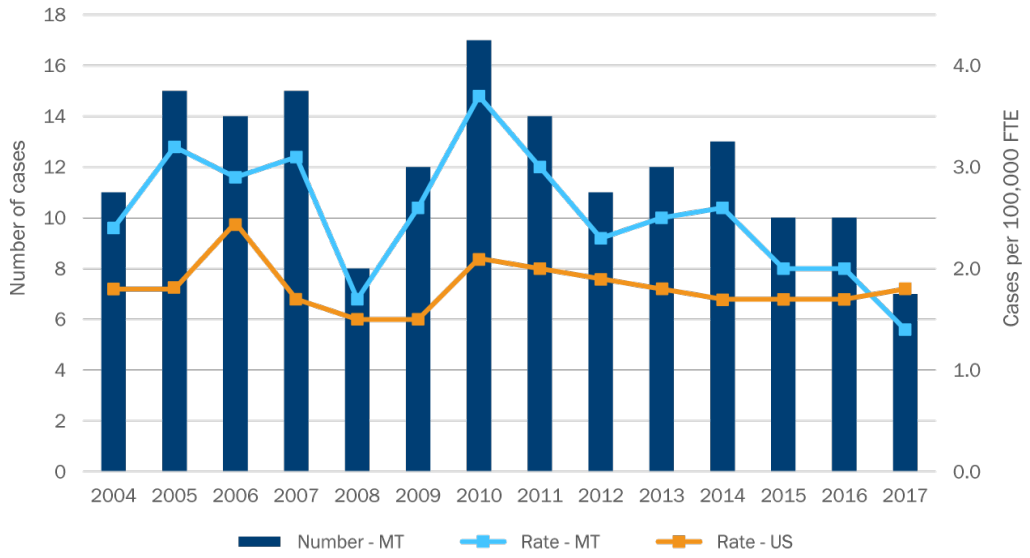
The Montana Department of Agriculture has an established cooperative agreement with the EPA to assume the primary responsibility for regulating pesticides in Montana. Employers must provide their employees with the proper protective equipment and pesticide safety training under EPA's Worker Protection Standards. Private pesticide applicators wanting to use restricted pesticide products and commercial applicators wanting to use pesticide products must go through a specific certification process. Homeowners and farmers do not have to be certified if using general use pesticide products. Prevention and education efforts are ongoing in Montana, including initial and continuing education trainings for commercial and government applicators, as well as private applicators. More information on such programs can be found at pesticides.montana.edu.

Indicator 11 uses data from the American Association Poison Control Centers to examine acute occupational pesticide-related illnesses. Data from BLS Current Population Survey (CPS) is used to calculate rates of these pesticide-related illnesses. Poison Control Centers (PCCs) do not systematically collect data on occupation and industry of reported cases, but this information can be identified. A limitation of the data is that PCCs capture only about 10% of acute occupational pesticide-related illnesses. Additionally, pesticide exposures may occur in workers under age 16, but corresponding denominator data to calculate rates is not readily available.

Results

Rates of reported work-related pesticide poisoning cases in Montana were higher than the national rates from 2004 to 2017. The lowest number of reported pesticide poisonings was in 2008, with eight reported poisonings. The highest number of reported pesticide poisonings occurred in 2010, with 17 reported poisonings. The rate of reported work-related pesticide poisonings in Montana has declined since 2010.

Figure 11.1 - Number and incidence rate (per 100,000 FTE) of reported work-related pesticide poisonings in Montana and the U.S., 2004-2017



Source: American Association of Poison Control Centers, BLS Current Population Survey (CPS). National data and data in Montana for this indicator were not available yet for 2014.

Indicator 12: Incidence of Malignant Mesothelioma

Background

Malignant mesothelioma is a rare, highly fatal cancer of the thin membranes lining the chest cavity (pleura) and abdominal cavity (peritoneum). Approximately 2,500 people die of malignant mesothelioma each year in the United States. The first case of mesothelioma was documented in 1767 but it wasn't until the 1960's that several peer-reviewed publications established a strong correlation between asbestos exposure and the formation of mesothelioma (asbestos.com/mesothelioma/history/). Asbestos exposure, primarily in the workplace, has been reported in 62 to 85 percent of all mesothelioma cases. The time between exposure and onset of symptoms is typically 20 to 40 years after exposure.

The Environmental Protection Agency (EPA) implemented a ban of many uses of asbestos in the United States in 1999. However, approximately 1.3 million workers in the United States continue to be exposed to asbestos in many industries and activities. Asbestos continues to be used in many manufactured products. Additionally, materials containing asbestos have been found in hundreds of thousands of schools, public buildings, and residential dwellings through the country.

Vermiculite Mountain, outside of Libby, Montana, had the largest vermiculite mine in the state from the 1920s until 1990, and provided over 80% of the worlds' vermiculite at one time. Unfortunately, most of the vermiculite was contaminated with asbestos. Many residents of Montana who mined, processed, or transported the vermiculite and asbestos ores had high exposures to these minerals.

From 1979 to 2002, the counties with the highest number of mesothelioma cases in Montana were Cascade (28), Yellowstone (23), Flathead (16), Missoula (16), and Lincoln (12). Lincoln, Cascade, and Rosebud counties had the highest mesothelioma rates per population, while Gallatin and Yellowstone counties had the lowest rates. Vermiculite Mountain, outside of Libby, Montana, is the site of one of the nation's largest vermiculite mines. Recent studies have reported detailed analyses

of asbestos-containing vermiculite and its association with many occupational fatalities over the years (www.ncbi.nlm.nih.gov/pmc/articles/PMC5318660/), (www.asbestos.com/jobsites/libby/).

Indicator 12 uses data from the Cancer Registry in the Montana Department of Public Health and Human Services to obtain incident cases of mesothelioma in Montana. Exact counts of cases were not available in 2012, except that there were less than 19 cases recorded. State population estimates from the U.S. Census Bureau and the Year 2000 U.S. standard population are used to calculate rates. Age-standardized rates of malignant mesothelioma were unable to be calculated prior to 2013. Not all cases of malignant mesothelioma are caused by occupational exposures. Because cancer is a disease of long latency, current incidence is not indicative of current exposures, and it may be many years before reductions in occupational exposures affect incidence. Additionally, the state of residence of the individual may not have been the state of exposure.

Results

The number of incident cases of malignant mesothelioma declined from 2004 to 2009, but increased again from 2009 to 2013, with a noticeable decrease again in 2014. However, the largest number of incident cases occurred in 2017(26). Thankfully, incident malignant mesothelioma cases have declined since then with 13 in 2018 and 11 in 2019. From 2004 to 2019, the lowest number of incident malignant mesothelioma cases was 7 in 2009.Age-standardized rates of malignant mesothelioma decreased from 20.9 to 12.5 cases of mesothelioma per million residents from 2013 to 2019.

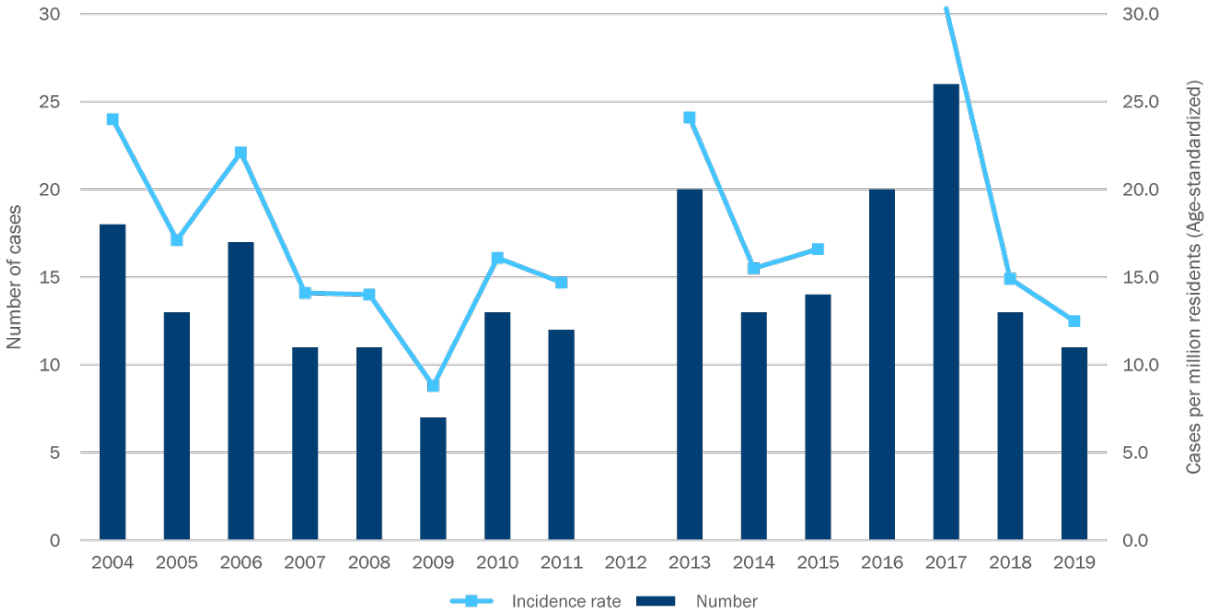
Based on data provided by the Montana Department of Public Health and Human Services, 219 cases of malignant mesothelioma were diagnosed from 2004 to 2019 (data missing = 23%). From 2005-2014, the mean age at diagnosis was 72 years old, with 4.8% of cases diagnosed at less than 50 years of age. Most of the mesothelioma cases were diagnosed in males (71.2%).

From 2004-2014, twenty-nine counties in Montana had mesothelioma cases, but nearly all the individual counties had too small of case counts to calculate rates of mesothelioma by geographic area at this time. A rate of 1.5 cases per 100,000 people was calculated for Yellowstone County, and this rate is similar to the state-wide rate of mesothelioma cases.

When industry information was available for cases, 35% of cases were in industries in which asbestos exposure may have occurred:

- Agriculture, forestry, and fisheries
- Mining
- Construction
- Manufacturing
- Transportation
- Communications
- Other public utilities

Figure 12.1 – Number and age-standardized incidence rate (per million residents) of malignant mesothelioma in Montana, 2004-2019



Source: Montana Department of Public Health and Human Services Cancer Registry, U.S. Census Bureau population estimates, National Cancer Institute Year 2000 U.S. Standard population

Data for this indicator in Montana was available for exact counts, except for in 2012, where only an estimate of <19 cases was reported. Age-standardized rates were only calculated in 2013 and 2014. For the previous years, only crude rates were reported. If there are less than 5 cases, the number may be too small to produce reliable estimates or may violate confidentiality requirements. Rates should not be calculated for counts less than 5 events.[2] Indicators based on MT DPHHS personal health information data with counts <20 cases should be interpreted with the understanding that these rates could be imprecise, based on DPHHS publication guidelines.

Indicator 13: Elevated Blood Lead Levels (BLL) Among Adults

Background

Lead poisoning is a medical condition caused by increased levels of the heavy metal lead in the body. Lead adversely affects multiple organ systems, including the heart, bones, intestines, and kidneys, and can cause permanent damage. In adults, lead exposure can cause anemia, nervous system dysfunction, kidney damage, hypertension, decreased fertility, and miscarriage.

Lead poisoning among adults is primarily due to occupational exposure. Occupational exposure may occur in workers engaged in storage batteries, mining of lead and zinc ores, working in firing ranges, and painting and paper hanging. The Occupational Safety and Health Administration (OSHA) requires employers to monitor their employee's blood lead levels if they are often exposed to airborne lead in the workplace. Workers can also "bring home" lead dust on clothing, which can expose their families and co-inhabitants to lead.

The blood lead level (BLL) is the best biological indicator of recent lead exposure. The average BLL of the general U.S. population is <2 micrograms per deciliter (µg/dL). Prior to 2009, the NIOSH-funded Adult Blood Lead Epidemiology and Surveillance (ABLES) program used a benchmark of 25 µg/dL for reporting cases. Currently, the benchmark used to report cases is 10 ug/dL, which was set in place in 2009.

Indicator 13 uses data from the Montana Adult Blood Lead Epidemiology Surveillance program (ABLES) in the Montana Department of Public Health and Human services to obtain data on blood

lead levels (BLLs) from laboratory records. Data from the BLS Current Population Survey (CPS) is used to calculate rates. To obtain BLL data for 2013, electronic laboratory records were pulled, rather than reported by ABLES, thus giving a higher count than previous years. BLLs reflect the contributions of acute external exposure to lead as well as the release of internal bone lead stores into the blood. For persons without significant lead body burden, a BLL is a good indicator of recent (preceding 3-5 weeks) external lead exposure. For persons with significant body burden, a single BLL may not be an accurate indicator of recent external exposure, as lead is also being released into the blood from bone stores.

Results

In Montana, it appears that the number of elevated blood lead cases increased substantially in 2013, but data collection for this year was different than previous years. In 2013, state-level data was not collected in Montana through ABLES, and so related searches were completed using electronic laboratory records, which captured many more cases than previous years. The use of these different data sources resulted in much higher counts for 2013, and the magnitude of the difference in rates should be cautiously interpreted. From 2010 to 2019, the rate of prevalent cases with BLL >= 10 µg/dL ranged between 6.2 and 22.9 cases per 100,000 FTE. Although the prevalence rate in 2019 (16.9) is significantly lower than in 2018 (22.9), rates have generally risen since 2010. However, rates patients having blood-lead levels of >=25ug/dL (Tables 13.1, 13.2).

Table 13.1 - Number and prevalence rate (per 100,000 FTE) and incidence rate (per 100,000 FTE) of adults with elevated blood lead levels >= 10 µg/dL in Montana, 2010-2019

Year	Number of residents with BLL >=10 µg/dL	Prevalence rate per 100,000 FTE
2009	N/A	N/A
2010	34	7.5
2011	29	6.2
2012	37	7.8
2013	68	14.1
2014	-	-
2015	95	18.9
2016	30	6
2017	107	21.4
2018	116	22.9
2019	87	16.9

Source: Reports of BLLs from electronic laboratory records (Montana Department of Public Health and Human Services), BLS Current Population Survey (CPS)

**Rates for counts less than 5 were not reported.*

Table 13.2 - Number and prevalence rate (per 100,000 FTE) of adults with elevated blood lead levels >= 25 µg/dL in Montana, 2009-2019

Year	Number of residents with BLL >=25 µg/d	Prevalence rate (per 100,000 FTE)
2009	7	1.46
2010	<5	*
2011	<5	*
2012	< 5	*
2013	20	4.13
2014	33	6.6
2015	36	7.2
2016	7	
2017	24	4.8
2018	22	4.3
2019	16	2.9

Source: Reports of BLLs from electronic laboratory records (Montana Department of Public Health and Human Services), BLS Current Population Survey (CPS)

**Rates for counts less than 5 were not reported.*

Indicator 14: Workers Employed in Industries with High Risk for Occupational Morbidity

Background

According to the Bureau of Labor Statistics (BLS), 2017, had over 2.8 million work-related injuries and illnesses reported by employers in the private industry in the United States. Previously, in 2004, there were 4.4 million work-related injuries and illnesses estimated by BLS in the private industry in the United States. Industries are considered at "high risk" for occupational morbidity if their injury and illness rates are more than twice the national rate.[1] Morbidity is a term that means "a diseased condition or state." The list of high-risk industries used to calculate this indicator is updated every five years, most recently to be used beginning in 2013.[2] Over 50 industries were included as high-risk industries in the most recent list, including vehicle manufacturing, meat processing, air transportation, nursing care facilities, skiing facilities, veterinary services, and delivery services.

Indicator 14 uses data from the U.S. Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses (SOII), which surveys a representative sample of private industry employers. The SOII is not a census of all employers and is subject to sampling error. Military personnel, self-employed workers, federal agencies, and farms with fewer than 11 employees are excluded from the survey. Additionally, survey respondents underreport injuries and illnesses on the OHSA forms, resulting in underestimation of incidence rates of work-related injuries and illnesses in the SOII data. Industry concentration and sample size may differ between states, and caution should be taken when comparing rates for Montana to national or state rates based on SOII data.

Results

Note: Caution should be taken when comparing rates for Montana to national or state rates. Some differences in these rates can be attributed to differences in industry concentration or sample size between states.

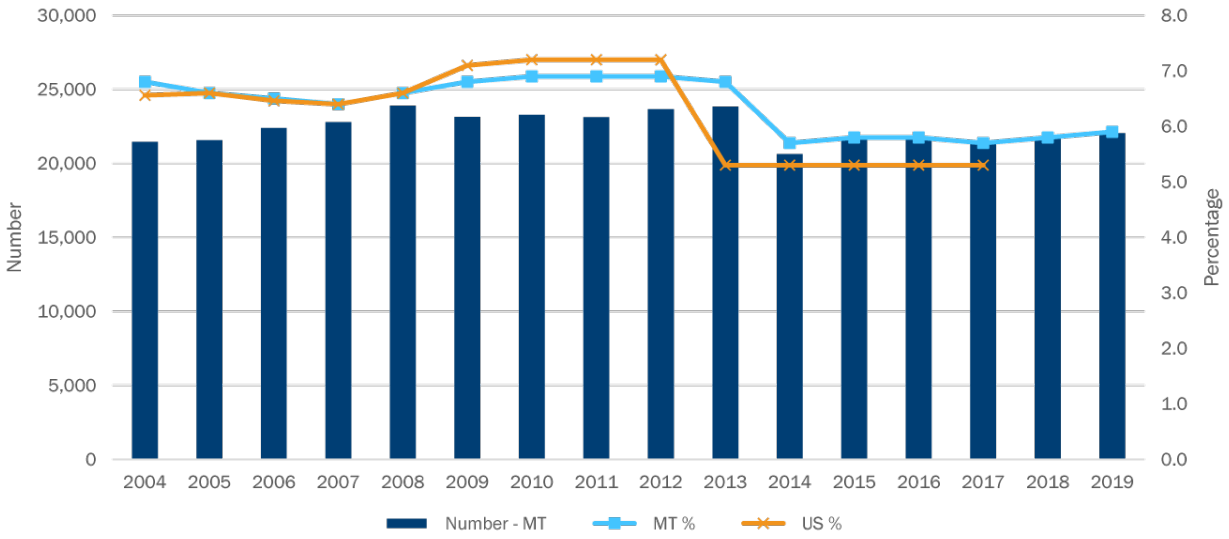
In 2019, Montana had 22,045 workers, or 5.9% of the state's workforce, employed in industries identified as "high risk" for morbidity. The high-risk industries with the largest number of workers were:

- Continuing care and assisted living facilities (4,222 workers)
- Skilled nursing facilities (4,137 workers)
- Couriers and express delivery services (2,350 workers)
- Veterinary services (1,951 workers)

- Psychiatric and substance abuse hospitals (1,375 workers)

source: data.census.gov/

Figure 14.1 - Number and percentage of workers employed in industries with high risk for occupational morbidity in Montana and U.S., 2004-2019



Indicator 15: Workers Employed in Occupations at High Risk for Occupational Morbidity

Background

In 2017, there were 2.8 million work-related injuries and illnesses reported by employers in the private industry in the United States. Previously, in 2004, there were 4.3 million work-related injuries and illnesses estimated by BLS in the private industry in the United States. Occupations are considered at "high risk" for occupational morbidity if their injury and illness rates are greater than two times the national rate. Morbidity is a term that means "a diseased condition or state." The list of high-risk occupations used to calculate this indicator is updated every five years, most recently to be used beginning in 2017.

Indicator 15 uses data from the U.S. Bureau of Labor Statistics' Survey of Occupational Injuries and Illnesses (SOII). This SOII is a representative sample of private industry employers. The SOII is not a census of all employers and is subject to sampling error. Military personnel, self-employed workers, federal agencies, and farms with fewer than 11 employees are excluded from the survey. Additionally, survey respondents underreport injuries and illnesses on the OHSA forms, resulting in underestimation of incidence rates of work-related injuries and illnesses in the SOII data. Industry concentration and sample size may differ between states, and caution should be taken when comparing rates for Montana to national or state rates based on SOII data.

Results

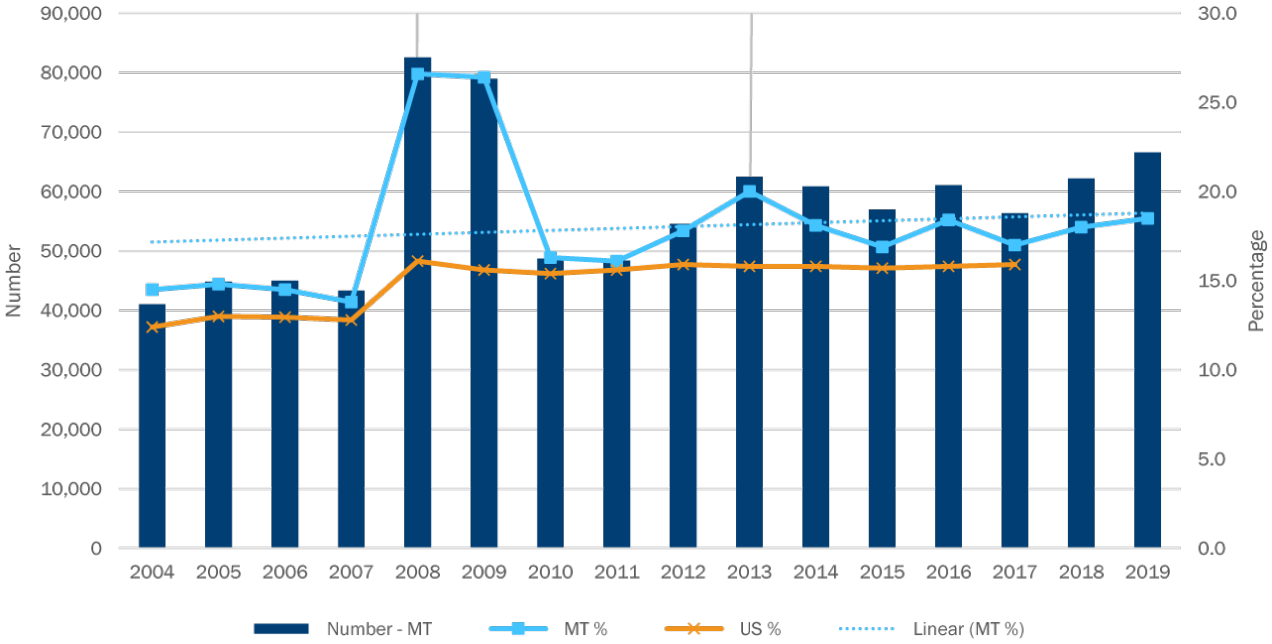
From 2004 to 2019, the percentage of workers employed in occupations with high risk for occupational morbidity in Montana increased from 14.5% to 18.5%, with a large increase in the percentage of workers employed in these occupations in 2008 and 2009 (approximately 26% of employed population). This increase in 2008 and 2009 could be a result of the change in occupation mix in 2008, but also may be due to other factors because the increase was not sustained over the whole time period that the new list was used.

In 2019, Montana had 66,562 workers, or 18.5% of the state's workforce, employed in occupations identified as "high risk" for morbidity. The high-risk occupations with the largest number of workers were:

- First-line supervisors of retail sales workers (9,366 workers)
- Retail salespersons (8,867 workers)
- Driver/sales workers and truck drivers (8,618workers)
- Registered nurses (8,510 workers)
- Cashiers (7,166 workers)

Source for the above labor statistics: data.census.gov/

Figure 15.1 – Number and percentage of workers employed in occupations with high risk for occupational morbidity in Montana and U.S., 2004-2019



The two vertical lines indicate when an updated list of high-risk occupations was used beginning in 2008 and in 2013.

www.cste.org/page/OHIndicators

Indicator 16: Workers Employed in Industries and Occupations at High Risk for Occupational Mortality

Background

Workers in certain industries and occupations sustain fatal injuries at a much higher rate than the overall workforce. This indicator examines the number of employees that are employed in industries and occupations the private sector that are considered to be high mortality risks. Industries and occupations are designated as high risk industries or occupations if the fatal injury rates are more than double the national fatal injury rate. The list of high-risk occupations and industries used to calculate this indicator is updated every five years, most recently to be used beginning in 2013. High mortality risk industries include animal production, construction, truck transportation, crop production, sawmills, and mining. High mortality risk occupations include construction laborers, truck drivers, electricians, grounds maintenance workers, agricultural workers, and railroad operators.

Indicator 16 uses data from BLS' Current Population Survey (CPS) and BLS Census of Fatal Occupational Injuries program (CFOI). Counts of the number of workers employed in the high risk industries and occupations are provided by the CPS. The CPS estimates employment information for the civilian noninstitutionalized population from a probability sample of households in the United States. Independent contractors and self-employed persons are included in the CPS data. The CFOI collects information on all work-related fatal injuries in the United States, including military personnel and volunteers. Fatalities coming and going from work (commuting) are not counted. CFOI reports data on work-related fatalities by the state in which the fatal incident occurred, which is not necessarily the state of death or the state of residence.

Results

Montana had much higher percentages of workers employed industries and occupations with high risk for death than the nation overall. In 2017, 22.5% of employed workers were employed in high-risk industries in Montana, while 15.7% of workers nationally worked in high-risk industries. In 2017, 16.3% of the worker population in Montana was employed in high-risk occupations, while 12.1% of the national worker population was employed in high-risk occupations.

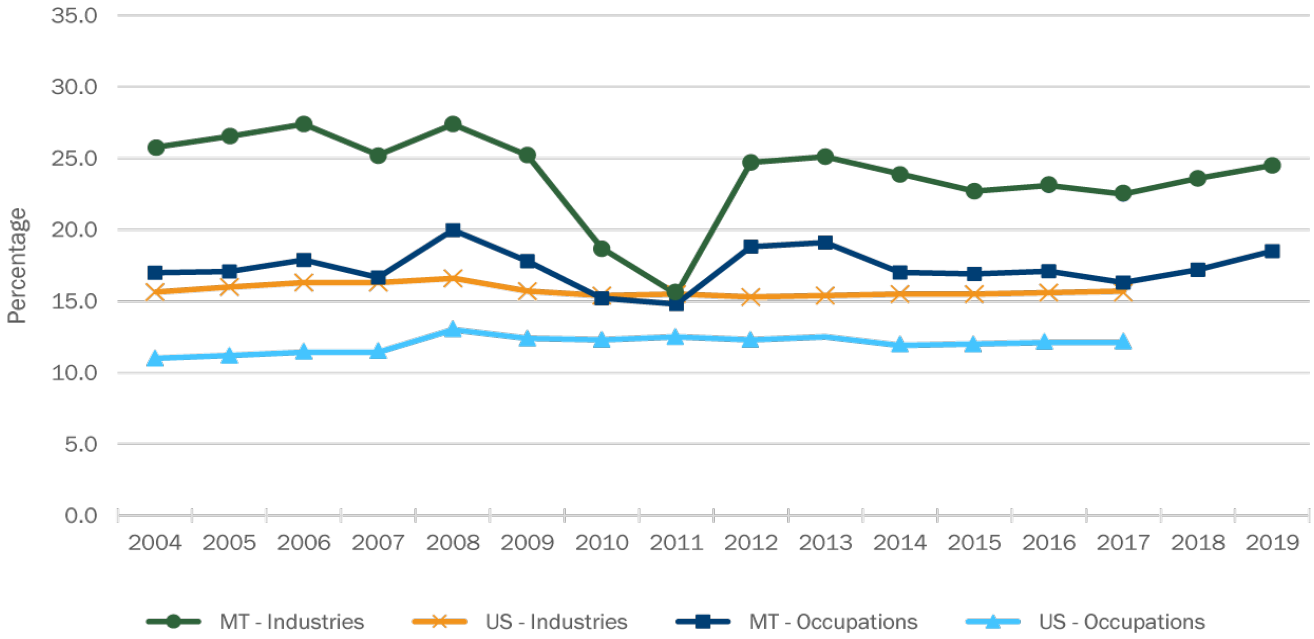
The top industries with high risk of death that employed the most workers in Montana in 2020 were:

- Construction (40,483 workers)
- Restaurants and other food services (29434 workers)
- Truck transportation (7,253 workers)
- Crop production (6,963 workers)
- Drinking places, alcoholic beverages (3,040 workers)

The top high mortality risk occupations that employed the most workers in Montana in 2020 were:

- First-line supervisors of retail sales workers (9,366 workers)
- Retail salespersons (8,867 workers)
- Driver/sales workers and truck drivers (8,618 workers)
- Registered nurses (8,510 workers)
- Cashiers (7,166 workers)
- *Source for the above labor statistics: data.census.gov/*

Figure 16.1 - Percentage of workers employed in industries and occupations at high risk for occupational mortality in Montana and U.S., 2004-2019



Source: www.cste.org/page/OHIndicators. National data was not available for 2018 and 2019.

Indicator 17: Occupational Safety and Health Professionals

Background

Occupational safety and health (OSH) professionals identify hazardous conditions and observe materials and practices in the workplace. These professionals help employers and workers reduce the risks imposed by hazardous conditions. It is important for Montana to have a sufficient number of OSH professionals to implement safety and health preventive services.

Indicator 17 provides information on the availability of occupational safety and health professionals in Montana. This indicator uses records from NIOSH on occupational safety and health professional organization memberships and BLS Current Population Survey (CPS) to determine the number of occupational safety and health professionals in the state. The organizations included in this indicator do not encompass all occupational and safety health professionals in Montana, as professionals may not be board certified or a member of the organizations. Other important occupational health specialties such as fire prevention, health physicists, and ergonomists are not included in this calculation.

Results

For the reader's information, data for indicator 17 are not available after 2015. In 2015, the number of occupational safety and health professionals able to serve the state of Montana included 10 Board-certified occupational physicians, 8 American College of Occupational and Environmental Medicine (ACOEM) members, 10 board certified occupational health registered nurses, 11 board certified industrial hygienists, 21 American Industrial Hygiene Association (AIHA) members, 70 board certified safety health professionals, and 198 American Society of Safety Engineers (ASSE) members. The number of occupational safety and health professionals in Montana remained fairly consistent from 2004 to 2015, with slight growth in the capacity to serve the community.

It is vital to continue to increase this safety and health capacity in Montana, in order to properly address occupational safety and health concerns across Montana.

Table 17.1 - Number of occupational safety and health professionals in Montana, 2004-2015

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Board certified occupational physicians	5	5	5	6	7	7	8	-	9	-		
ACOEM members	8	8	9	10	11	12	14	-	15	15	9	8
Board certified occupational health	5	6	6	6	7	8	9	-	-	9	9	10
AAOHN members	8	10	8	7	8	7	0	-	8	-		
Board certified industrial hygienists	16	16	18	21	23	24	20	-	11	17	18	11
AIHA Members	31	27	27	17	26	24	21	-	24	14	2	21
Board certified safety health professionals	18	26	26	28	33	36	39	-	49	57	58	70
ASSE members	95	118	103	94	120	104	125	-	156	142	162	198

Source: American Board of Preventative Medicine database, American College of Occupational and Environmental Medicine (ACOEM) member rosters, American Board of Occupational Health Nurses directory, American Association of Occupational Health Nurses (AAOHN) member roster, American Board of Industrial Hygiene data, American Industrial Hygiene Association (AIHA) member directory, Board Certified Safety Health Professionals (BCSP) member directory, American Society of Safety Engineers (ASSE) member directory, BLS Current Population Survey (CPS) data

Table 17.2 – Rate (per 100,000 workers) of occupational safety and health professionals in Montana, 2004-2015

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Board certified occupational physicians	1.1	1.1	1.1	1.0	1.2	1.5	1.7	-	1.9	-	2.0	2.0
ACOEM members	1.7	1.7	1.8	2.0	2.3	2.6	3.0	-	3.2	3.1	1.8	1.6
Board certified occupational health	1.1	1.3	1.2	1.2	1.5	1.7	1.9	-	-	1.9	1.8	2.0
AAOHN members	1.7	2.1	1.6	1.4	1.7	1.5	0.0	-	1.7	-	*	*
Board certified industrial hygienists	3.5	3.4	3.7	4.3	4.8	5.2	4.3	-	2.3	3.5	4.0	2.2
AIHA Members	6.7	5.7	5.5	3.5	5.4	5.2	4.5	-	5.1	2.9	4.0	4.2
Board certified safety health professionals	3.9	5.5	5.3	5.7	6.9	7.8	8.4	-	10.3	11.8	10.0	13.9
ASSE members	20.6	24.8	19.1	19.1	25.0	22.5	26.8	-	32.8	29.3	30.0	39.4

Source: American Board of Preventative Medicine database, American College of Occupational and Environmental Medicine (ACOEM) member rosters, American Board of Occupational Health Nurses directory, American Association of Occupational Health Nurses (AAOHN) member roster, American Board of Industrial Hygiene data, American Industrial Hygiene Association (AIHA) member directory, Board Certified Safety Health Professionals (BCSP) member directory, American Society of Safety Engineers (ASSE) member directory, BLS Current Population Survey (CPS) data

Indicator 18: OSHA Enforcement Activities

Background

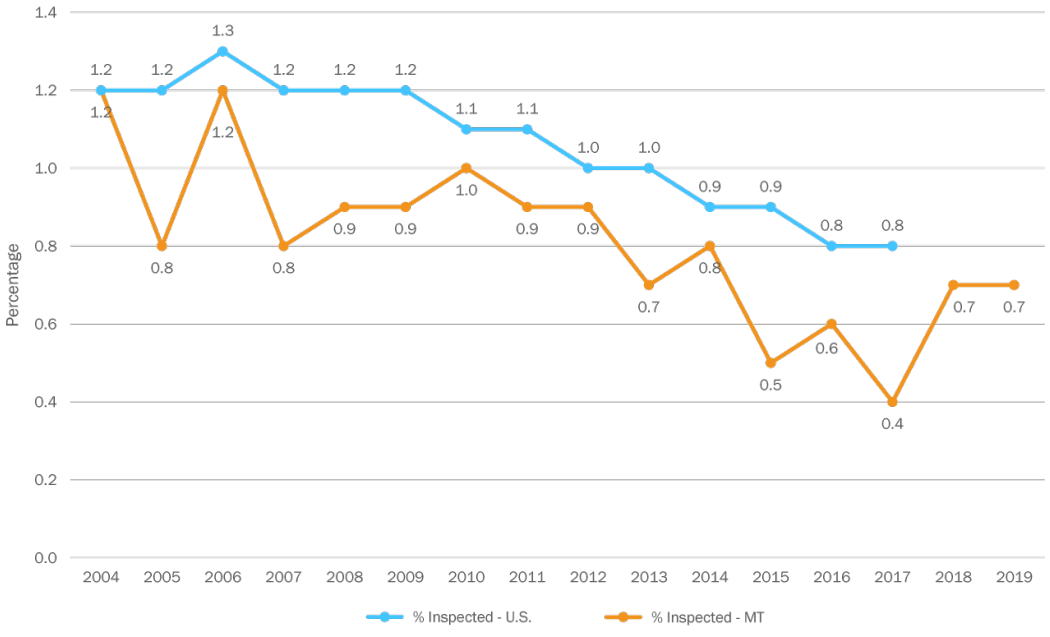
The Occupational Safety and Health Administration (OSHA), under the U.S. Department of Labor, conducts investigations and inspections at worksites to ensure compliance with employee safety and health standards and regulations. OSHA jurisdiction in Montana includes private and federal employers and employees. The Montana Safety Culture Act and the Montana Occupational Safety and Health Act require safety and health inspections of workplaces of public employers. There are approximately 100 single public entities to be inspected statewide under this mandatory inspection program. Investigations and inspections typically occur at worksites in the event of work-related fatal and non-fatal injuries, hospitalizations, employee complaints and outside referrals. Random inspections are also conducted at high-risk worksites.

This indicator uses data on OHSA inspections of public and private sectors obtained by NIOSH, and data from BLS Quarterly Census of Employment and Wages (QCEW) to quantify OSHA enforcement activity in Montana. The percentage of establishments inspected may be slightly overestimated since OSHA may conduct multiple inspections of the same establishment during the calendar year. The number of workers covered by OSHA inspections may also be over counted because OSHA may conduct multiple inspections of the same worksite during the year. Montana falls under federal OSHA jurisdiction, so farms with 10 or fewer employees are not inspected.

Results

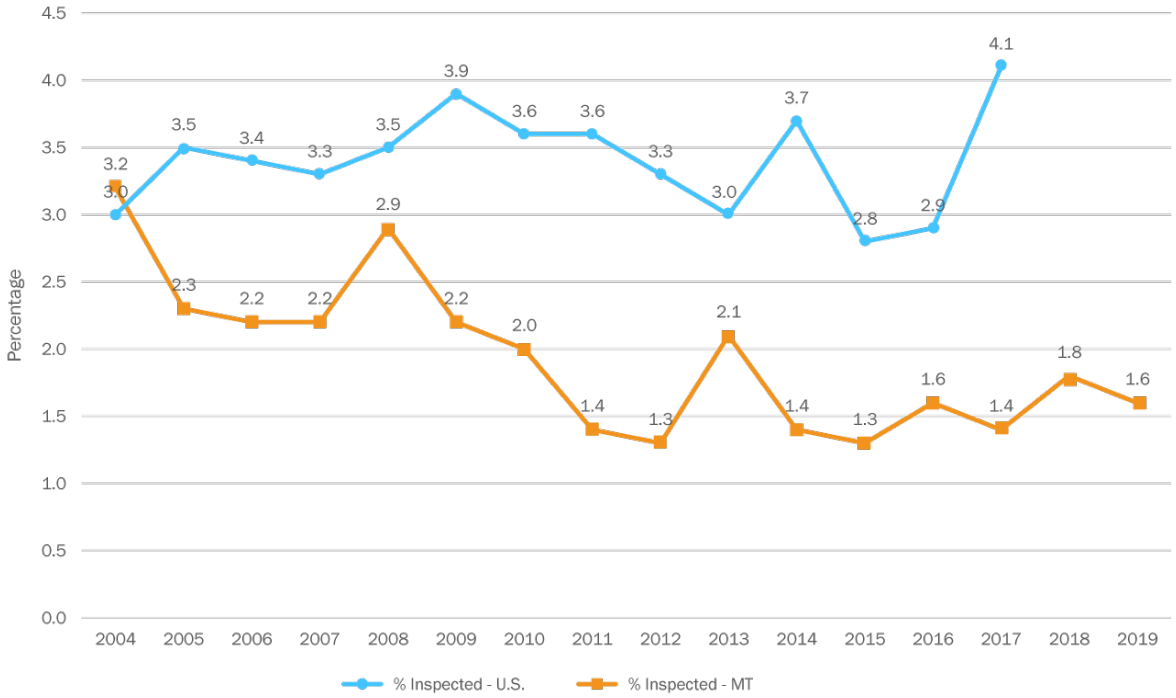
In 2017, there were 446,127 establishments under OSHA jurisdiction in Montana, and OSHA inspected 201 establishments (0.4%), down from a high of 1.2% of establishments inspected in 2004. The number of Montana covered employees eligible for inspections was 379,057 in 2017, compared to 329,060 employees in 2004. In 2017, OSHA inspected 1.4% of eligible employees, compared to 3.2% of eligible employees inspected in 2004.

Figure 18.1 – Percentage of establishments under OSHA jurisdiction that were inspected by OSHA in Montana (2004-2019) and the U.S., (2004-2017)



Source: www.cste.org/page/OHIndicators. National data for this indicator was not available for 2018 and 2019.

Figure 18.2 – Percentage of employees working at an establishment that was inspected by OSHA in Montana and the U.S., 2004-2017



Source: www.cste.org/page/OHIndicators. National data for this indicator was not available for 2018 and 2019.

Indicator 19: Workers' Compensation Benefits

Background

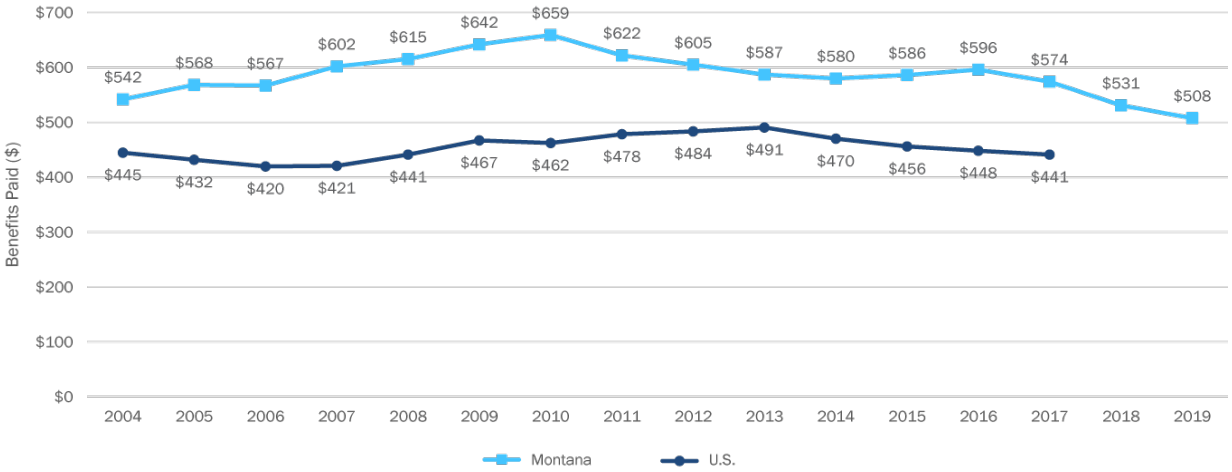
Workers' compensation is a state-based social insurance program that covers work-related injuries and illnesses. Benefits can include lost wages, related medical expenses, disability payments, and survivor benefits. Amounts of paid benefits represent the direct financial burden of work-related injuries and illnesses. Montana Code Annotated (MCA) requires mandatory workers' compensation coverage for any persons in the state in service of an employer specified by law (39-71-118, MCA). This includes, for example, agricultural workers, undocumented workers, minors, part-time and full-time employees, and elected and appointed paid public officers. Montana statute provides for 26 exemptions from coverage, including independent contractors, household or domestic workers, barbers and cosmetologists, respite care and companionship services, to name a few.
Indicator 20 uses data from the National Academy of Social Insurance (NASI) to examine workers' compensation benefits paid in Montana. Compensation award payments are frequently made over time, thus annual awards may not reflect the full cost of injuries and illnesses for a given year.

Results

In Montana, total workers' compensation benefits paid in 2019 were $230,000,000, which represented a slight decrease from $237,377,000 paid in 2018. In 2004, total paid workers' compensation benefits were $211,460,000.

For Montana, the average benefit paid per covered worker (in 2019) was $508, compared to the national average (in 2017) of $441. This average is slightly higher than the average benefit paid in 2004 in Montana, which was $542 per covered worker.

Figure 19.1 – Average amount of workers' compensation benefits paid per covered worker in Montana (2004-2019) and the U.S., (2004-2017)



Source: www.cste.org/page/OHIndicators. National data and data for Montana for this indicator was not available for 2018 and 2019

Indicator 20: Work-related Low Back Disorder Hospitalizations

Background

Hospitalizations for work-related disorders have serious and costly effects in the workplace, including higher medical costs, significant functional impairment and disability, high absenteeism, reduced work performance, and lost productivity. Each year, 15-20% of Americans report back pain, resulting in over 100 million workdays lost, and more than 10 million physician visits. Back pain represents about 20% of workers' compensation claims yet comprises almost 40% of the costs. The National Health Interview survey estimates that 66% of all low back cases are attributable to occupational activities. Work that involves heavy lifting, pushing, and pulling can result in low back injury and pain. Work that is more inactive in nature may still lead to low back injury and pain due to poor posture or inadequate back support if sitting for extended periods of time.

Indicator 20 uses hospital discharge data from the Montana DPHHS to examine low back disorder hospitalizations overall in Montana, including surgical low back disorder hospitalizations. State population estimates were taken from BLS Current Population Survey (CPS) to calculate rates. Hospital discharge data does not provide explicit information about the "work-relatedness" of a condition for which a patient is hospitalized, but the designation of workers' compensation as primary payer for the hospital stay is a good proxy for work-relatedness of the injuries. Attribution of primary payer as workers' compensation in discharge data may not be accurate, and data between states may not be comparable due to the differences in workers' compensation programs. The CPS excludes active-duty members of the military, inmates in institutions, and workers less than 16 years old. Additionally, the CPS data may underestimate percentages for certain worker populations that do not have permanent residents. Additionally, this indicator only captures cases that were admitted to the hospitals as inpatient cases; acute cases admitted via the emergency department, but not admitted as inpatient cases are not included in this indicator. The Montana Hospital Association (MHA) changed reporting of payer in 2008, and so the numbers of hospitalizations from the periods 2000-2007 and 2012-2014 vs. 2008-2011 are not comparable.

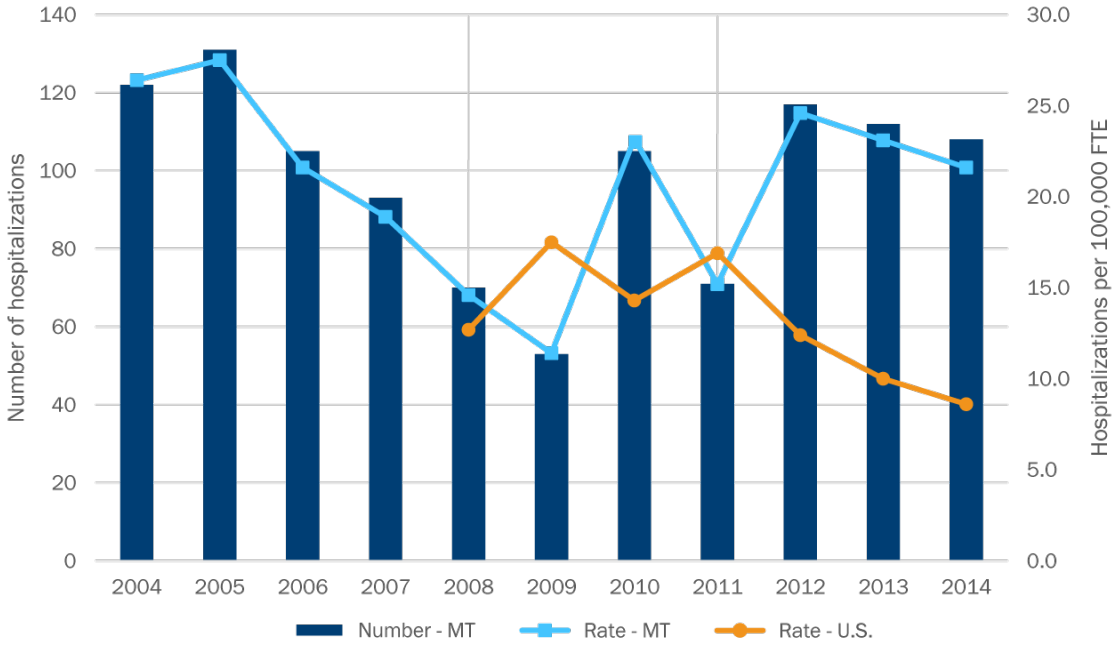
Results

Prior to 2008, the rate of work-related low back disorder hospitalizations had declined from 26.4 to 18.9 hospitalizations per 100,000 FTE from 2004 to 2007. There was a substantial increase in hospitalizations from 2009 to 2010; the rate almost doubled from 11.4 to 23.2 hospitalizations per

100,000 FTE. The rate declined again in 2011, back to 15.2 hospitalizations per 100,000 FTE. From 2012 to 2014, the rate of work-related low back disorder hospitalizations has decreased slightly from 24.6 to 21.6 hospitalizations per 100,000 FTE.

Publicly available data pertaining to work-related low back disorder hospitalizations in Montana are not available after 2014. In addition, data on work-related surgical low back disorder hospitalizations was not available prior to 2012. From 2012 to 2014, the rate of work-related surgical low back disorder hospitalizations decreased slightly from 19.4 to 17.8 hospitalizations per 100,000 FTE. More information is needed to determine trends for indicator-20 (Figs 20.1, 20.2)

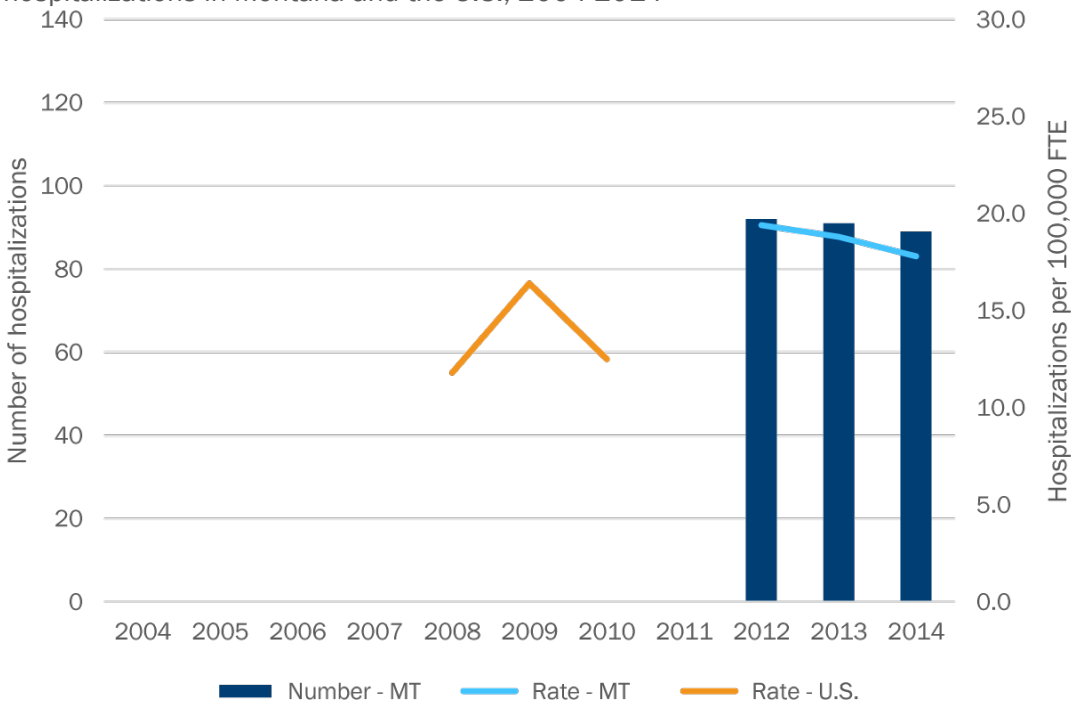
Figure 20.1 – Number and rate (per 100,000 FTE) of work-related low back disorder hospitalizations in Montana and the U.S., 2004-2014



Source: www.cste.org/page/OHIndicators. Montana Hospital Association (MHA) changed reporting of payer in 2008; Numbers of hospitalizations from the periods 2000-2007 and 2012-2014 vs. 2008-2011 are not comparable. Indicated by vertical lines.

Continued on next page.

Figure 20.2 – Number and rate (per 100,000 FTE) of work-related surgical low back disorder hospitalizations in Montana and the U.S., 2004-2014



Montana Hospital Association (MHA) changed reporting of payer in 2008; Numbers of hospitalizations from the periods 2012-2014 vs. 2008-2011 are not comparable.

Data on surgical low back hospitalizations was not available prior to 2012.

Indicator 21: Asthma Cases Caused or Made Worse by Work

Background

Asthma is a chronic inflammatory disease of the airways that affects more than 18 million adults in the United States. Work-related asthma describes asthma that has a temporal association between asthma symptoms and the work environment. It has been estimated that 36-58% of adult asthma is caused or made worse by workplace exposures in the United States, but work-related asthma continues to be underdiagnosed.

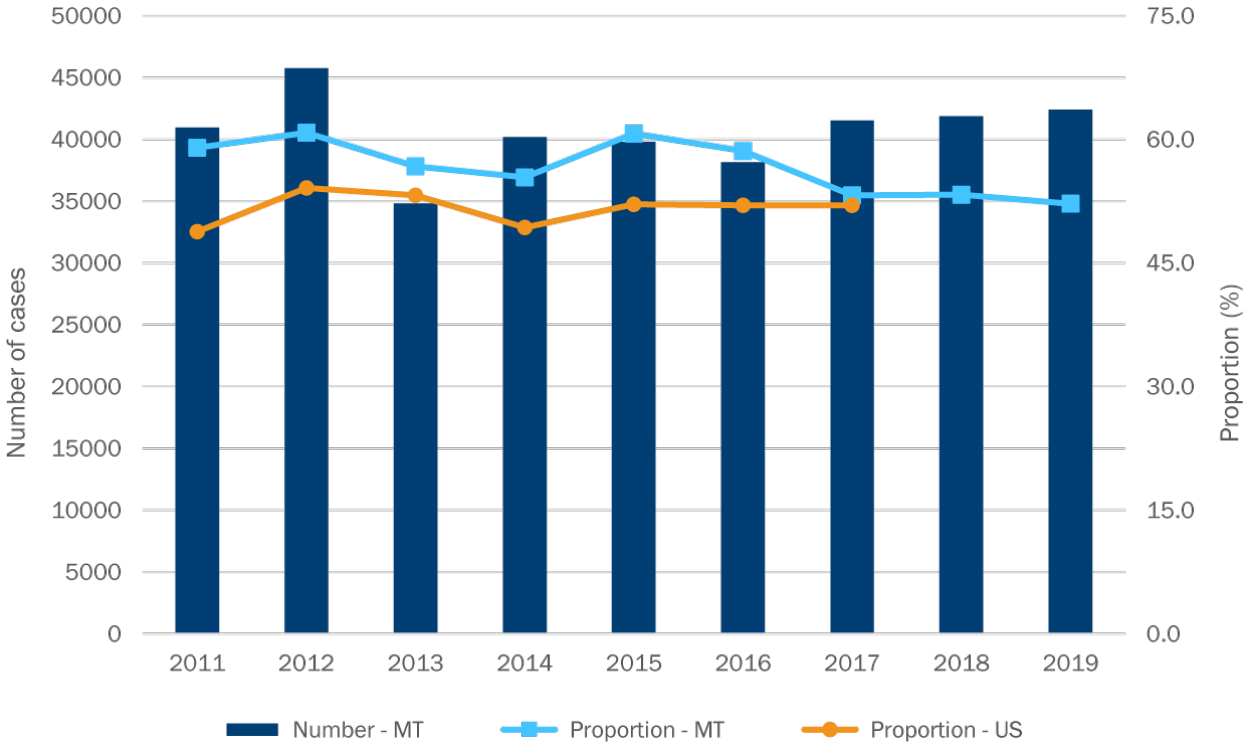
Work-related asthma is preventable, but often goes undiagnosed or is under-diagnosed by physicians. Research has shown that work-related asthma can have adverse effects on the worker, including morbidity, adverse socioeconomic impacts and difficulty getting and sustaining work. Estimating the burden of asthma caused or made worse by work can help target prevention programs and activities.

Indicator 21 represents a population-based estimate of asthma caused or made worse by work. This indicator uses data from the Asthma Call-Back Survey (ACBS) conducted by the Montana Behavioral Risk Factor Surveillance System (BRFSS). BRFSS is a cross-sectional telephone health survey of non-institutionalized adults that is collected monthly. The ACBS is an in-depth asthma survey among BRFSS respondents, and contains multiple questions related to work-relatedness of the respondent's asthma. The indicator does not distinguish between new-onset asthma and work-aggravated asthma. The ACBS began new weighting methods in 2011 and the wording and order of questions changed in 2012, therefore any trend analysis would need to be restricted to 2012 forward. The data are subject to measurement, nonresponse, and sampling errors.

Results

In Montana, the proportion of adults with work-related asthma has decreased slightly, with 52.1% of adults with asthma reporting their asthma was work-related in 2019 as compared to 59.0% in 2011. This proportion was slightly higher than the national proportion from 2011 to 2017 (Fig. 21.1).

Figure 21.1 - Number and proportion of adults with asthma caused or made worse by work in Montana and U.S., 2011-2014



Source: www.cste.org/page/OHIndicators. Data for this indicator was not collected prior to 2011 and was not collected after 2017.

Indicator 22: Work-Related Severe Traumatic Injury Hospitalization

Background

Acute work-related trauma is a leading cause of death and disability for U.S. workers. In 2010, more than 4,500 U.S. workers died from occupational injuries. Severe traumatic injury can lead to long-term pain/disability and is very costly for workers' compensation systems and society as a whole.

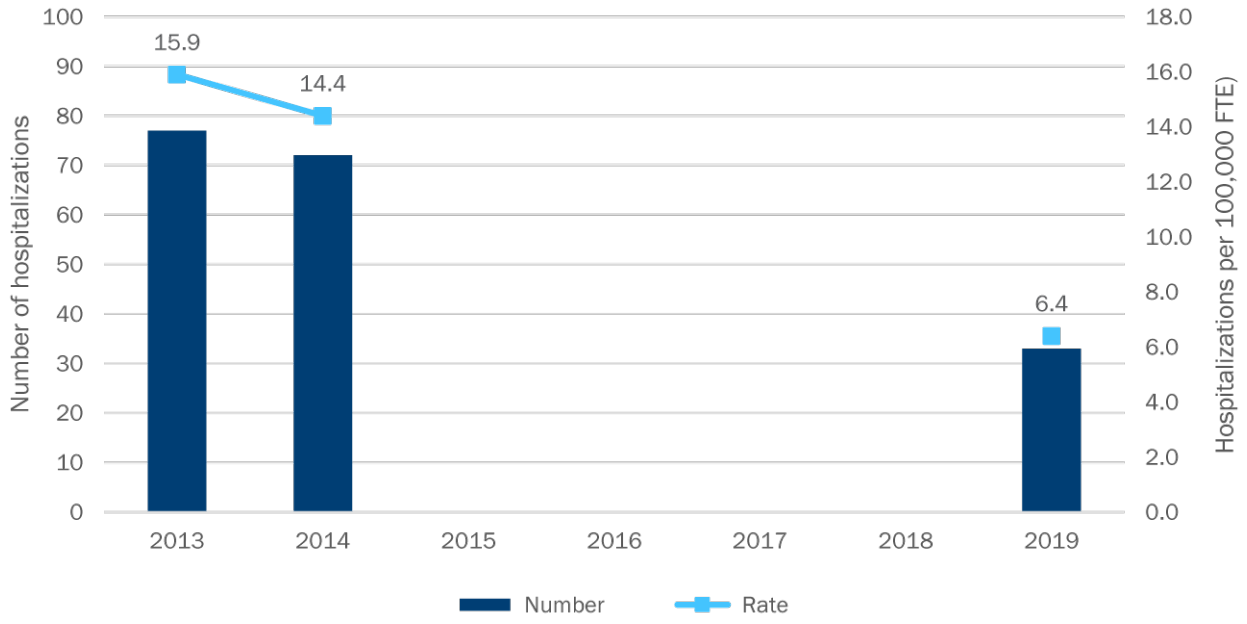
Indicator 22 uses hospital discharge data from the Montana DPHHS to examine work-related severe trauma injury hospitalizations overall in Montana. State population estimates were taken from BLS Current Population Survey (CPS) in order to calculate rates. Hospital discharge data does not provide explicit information about the "work-relatedness" of a condition for which a patient is hospitalized, but the designation of workers' compensation as primary payer for the hospital stay is a good proxy for work-relatedness of the injuries. Attribution of primary payer as workers' compensation in discharge data may not be accurate, and data between states may not be comparable due to the differences in workers' compensation programs. The CPS excludes active-duty members of the military, inmates in institutions, and workers less than 16 years old. Additionally, the CPS data may underestimate percentages for certain worker populations that do not have permanent residents. Additionally, this indicator includes only patients that are hospitalized in Montana and are Montana residents. The Montana Hospital Association (MHA) changed reporting of payer in 2008, and so the

numbers of hospitalizations from the periods 2000-2007 and 2012-2014 vs. 2008-2011 are not comparable.

Results

The number of work-related hospitalizations for severe traumatic injuries in Montana decreased from 77 cases to 72 cases from 2013 to 2014 and then to 33 in 2019 The crude rate of these hospitalizations decreased from 15.9 to 14.4 cases per 100,000 FTE from 2013 to 2014 and from 14.4 in 2014 to 6.4 in 2019. Additional years of data will be useful in evaluating this emerging trend in hospitalizations due to severe traumatic injuries in the workplace.

Figure 22.1 – Number and rate (per 100,000 FTE) of work-related hospitalizations for severe traumatic injuries in Montana, 2013-2014



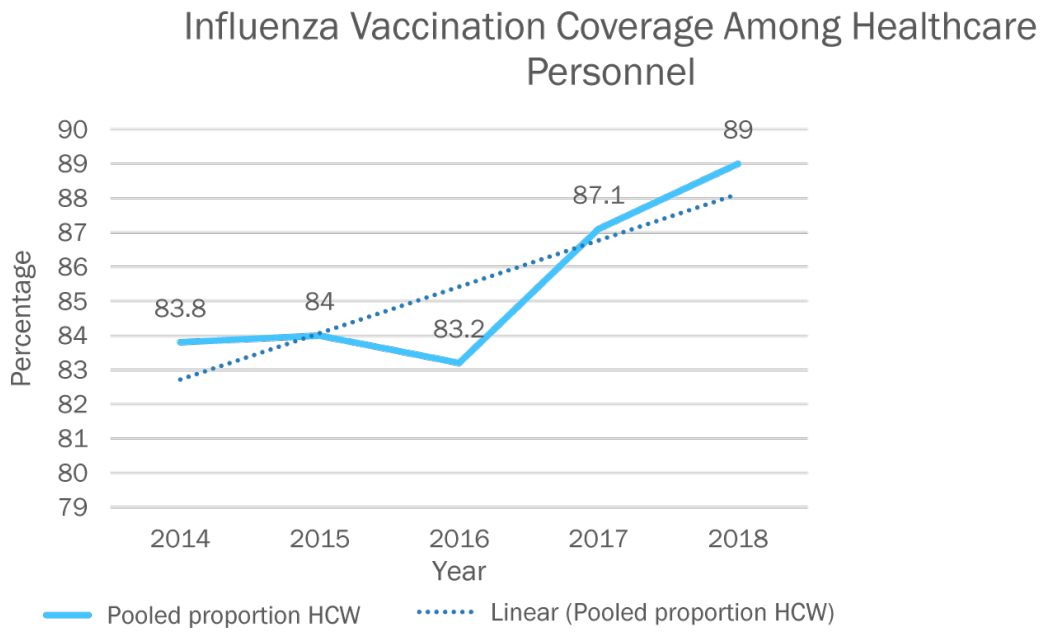
Source: www.cste.org/page/OHIndicators. Data for this indicator was not reported prior to 2013, when the indicator was first introduced. National data not available. Montana data not available for 2015 -2018.

Indicator 23: Influenza Vaccination Coverage Among Healthcare Personnel

Background

Influenza has long been recognized as a significant cause of morbidity and mortality, resulting in an average of 23,706 influenza-related deaths from 1976 to 2007 in the United States. According to the Montana Department of Public Health & Human Services, (DPHHS) Montana had 11,255 cases, 514 hospitalizations, and 41 deaths attributed to influenza during the 2019/2020 influenza season. Healthcare workers can serve as vectors for influenza transmission because they are at risk for both acquiring influenza from patients and transmitting it to patients. Higher influenza vaccination coverage among healthcare workers is associated with reductions in hospital-acquired influenza among hospitalized patients. The Healthy People 2020 target goal was to increase the percentage of healthcare workers in the United States who are vaccinated against seasonal influenza annually to 90%. Montana appears to have met this goal since the rate of healthcare personnel Influenza vaccination climbed from 83.8% in 2014 to nearly 90% in 2018 (Fig. 23.1)

Figure 23.1 – Percentage of healthcare personnel vaccinated against Influenza



Source: dphhs.mt.gov/assets/publichealth/CDEpi/DiseasesAtoZ/influenza/MontanaInfluenzaSummary20192020.pdf

Indicator 24: Occupational Heat-Related Emergency Department Visits

Background

Exposure to environmental heat is a clear recognized hazard for many occupations where individuals are not able to maintain thermal equilibrium due to their work environment, required clothing type, and usage of protective equipment. In 2010, approximately 3,470 private sector workers in the United States experienced a non-fatal work-related injury or illness (e.g., heat stroke) due to environmental heat exposure, which required days away from work.

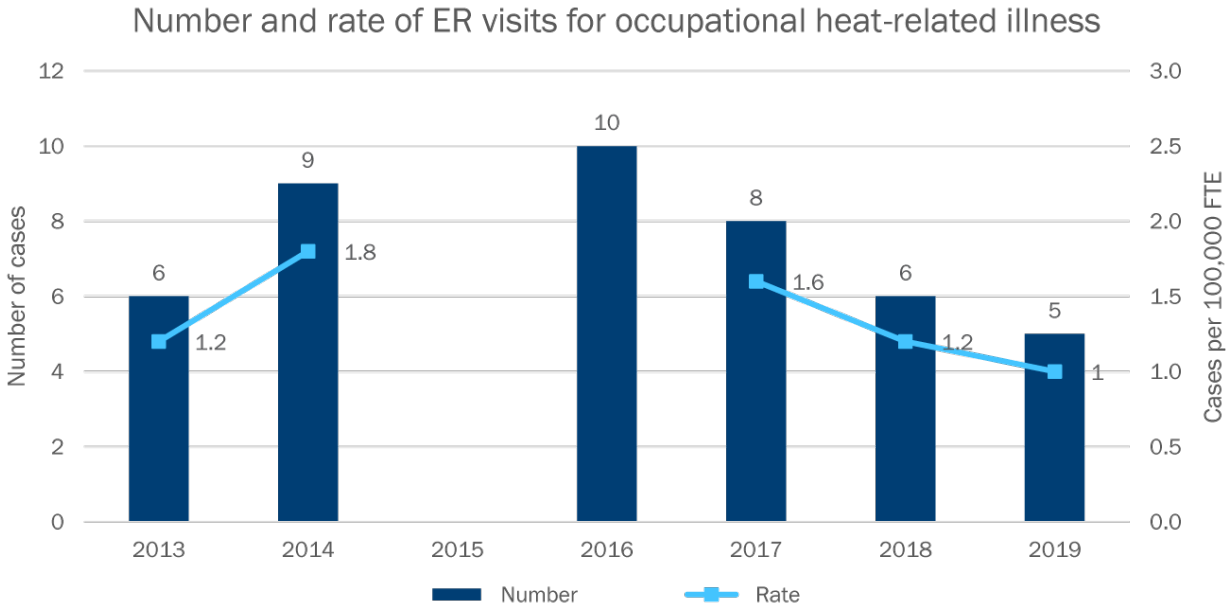
Indicator 24 examines data on emergency department visits that are heat-related and work-related in nature. Rates of occupational heat-related department visits are calculated based on data from the Montana DPHHS and BLS Current Population Survey (CPS). Industry and occupation are not collected in the emergency department, making it difficult to identify those industries and occupations at high risk of heat-related illness. Hospital discharge data does not provide explicit information about the "work-relatedness" of a condition for which a patient is hospitalized, but the designation of workers' compensation as primary payer for the hospital stay is a good proxy for work-relatedness of the injuries. Attribution of primary payer as workers' compensation in discharge data may not be accurate, and data between states may not be comparable due to the differences in workers' compensation programs. The CPS excludes active-duty members of the military, inmates in institutions, and workers less than 16 years old. Additionally, the CPS data may underestimate percentages for certain worker populations that do not have permanent residents.

Results

For Montana, rates of occupational heat-related emergency department visits have been fairly low statewide since 2013. The number of heat-related illness cases peaked in 2016 (10 cases) but has fallen since then with 2019 having the lowest number (5) since 2013. It bears mentioning that due to the low numbers of heat related illness, it is difficult to derive statistical significance from year to

year. Data for this indicator likely isn't a reflection of the number of heat-related incidents but rather, a reflection of underreporting since many of the workers that are exposed to extreme heat on the job (roofers/construction workers) are independent contractors.

Figure 24.1 - Number and rate (per 100,000 FTE) of emergency department visits for occupational heat-related illnesses in Montana, 2013-2019



Source: Montana DPHHS. Data for this indicator was not reported prior to 2013when the indicator was first introduced. Data for this indicator was not available for 2015.

CONCLUSIONS

The Montana Occupational Health and Safety Surveillance Program (MOHSS) put together this foundational report with the intention to begin to track and describe occupational health issues impacting the Montana workforce.

- Montana's workforce is growing. Montana has seen an increase in the number of employed persons from 462,000 in 2004 to 516,000 in 2019 (Fig P.1). This represents a growth percentage of 11.7%. However, the population has increased from 930,009 to 1,070,000 during the same timeframe. This represents a 15% increase. When population increase is considered, a lower percentage of Montanans were working in 2019 than in 2004 (48.2% vs 49.7%, respectively). Since 2010, there has been a decline in unemployment both at the federal and state levels. The 2008/2009 surge in unemployment was undoubtedly due to the 2008 financial crisis. However, compared to the national average, Montana was affected less overall, and recovered more quickly. (Fig P.2.1).

- Montana's workforce is ageing and is working longer hours. The number of people working over 40 hrs/week has jumped from 23.3% in 2009 to 26.7% in 2019 (Fig. P.4). Additionally, the percentage of workers between the ages of 65 and 74 more than doubled from 3.1% in 2009 to 6.5% in 2019 (Fig P.7). When comparing the US with Montana for 2019, Montana's workforce had 6.5% of workers between 65 and 74 years of age compared with 5.4% for the US (Fig P.8).

- Montana is doing better than the national average for percentage of female workers. For example, the percentage of female employees in the US workforce in 2011 was 46.9. The percentage of female employees for Montana in 2011 was 48.7. An examination of these percentages over time shows a smaller gap between the percentage of men and women in the Montana workforce than exists in the national average (Figs P.5 and P.6)

- Montana consistently has a much higher incidence rate of non-fatal occupational injuries and illnesses, compared to the national average (Figure 1.2). The incidence rates of non-fatal work-related injuries and illnesses for the United States and Montana both declined from 2004 to 2019, but the incidence rate for Montana remained considerably higher than the national rate at the end of the time period. (Fig 1.2). In 2008, Montana had the highest incidence rate for non-fatal injuries and illnesses in private industry in the entire nation. (of 42 surveyed states). In 2014, Montana had the third highest incidence rate for non-fatal work-related injuries and illnesses (4.5 cases per 100 FTE). Finally, in 2017, not only was Montana the state with the highest rate of non-fatal work-related injuries (4,300) but it was nearly 35% higher than the national average (2,800).

- From 2004 to 2019, the percentage of workers employed in occupations with high risk for occupational injury and illness in Montana increased from 14.5% to 18.5%, with a large increase in the percentage of workers employed in these occupations in 2008 and 2009 (approximately 26% of employed population). As with occupational injuries and illness, the number of employees in high-risk occupations is consistently above the national average.

- In 2019, 5.9% of the Montana's workforce were employed in industries identified as "high risk" for injury or illness, as designated by BLS. According to the United States Census Bureau, the high-risk industries with the largest number of workers in 2019 were primarily in the medical and delivery service industries.

- In 2019, 18.5% of the Montana's workforce were employed in occupations identified as "high risk" for injury or illness, as designated by BLS. According to the United States Census Bureau, the high-risk occupations with the largest number of workers in 2019 were those in retail/sales as well as in registered nursing.

- Montana had much higher percentages of workers employed industries and occupations with high risk for death than the nation overall (Figure 16.1). In 2019, 24.5% of employed workers were employed in high-risk industries in Montana, and 18.5% of the worker population in Montana was employed in high-risk occupations.

- Montana has a considerably high percentage of workers that are self-employed. Though the percentage of self-employed workers in Montana has been consistently higher than the national percentage (9.0% vs. 6.2% in 2017), this number has been falling relative to the national average. If this trend continues, the Montana percentage may be expected to match the national average in the next several years (Fig P.2.2)

Closing

Workers in Montana are faced with unique challenges. Many of Montana's workers are in occupations that are considered at high risk for injury and illness. In addition, Montana's workforce appears to be working longer hours than it was ~10 years ago. These in combination with a growing workforce and a simultaneous decrease in safety enforcement may account, at least in part, for the increasing occupational injuries in Montana. Intervention or prevention efforts aimed at improving the health and safety of Montana workers should be based on accurate, fact-based information

regarding the unique occupational health issues in Montana. Workplace injuries and illnesses are preventable, and the MOHSS will continue to actively identify, track, and monitor work-related injuries and illnesses to inform intervention and prevention efforts based on the realities of working in Montana.

COMPLETE DATA TABLES

Demographics	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Employed Persons (FTE)	462,000	476,000	487,000	492,000	481,000	463,000	452,000	466,000	475,000	484,000	500,000	502,000	500,000	500,000	506,000	516,000
P1. Percentage of civilian workforce unemployed	4.9	4.4	3.6	3.6	5.2	7.1	7.7	7.3	6.1	5.5	4.6	4.2	4.2	4	3.7	3.5
P2. Percentage of civilian employment self-employed	14.3	13.5	13.2	12.9	13.7	11.7	11.3	12	12	11.8	9.8	9	9.8	9	8.7	8.3
P3. Percentage of civilian employment in part-time jobs	22.5	21.2	20.1	21.1	21.2	21.8	22.1	23.4	23.8	21.7	22.2	21.7	22.8	22.2	21.1	21.1
P4. Percentage of civilian employment by number of hours worked	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<40 hours	40.3	40.8	38.2	37.8	39.3	43.6	40.3	41.4	40.8	37.2	39	39	38.4	38	37.2	36
40 hours	30.3	29.6	32	32.5	33.9	33	35.2	35	36.8	38.6	36.6	36.7	36.6	37.2	36.8	37
41+ hours	29.4	29.6	29.8	29.7	26.8	23.3	24.3	23.4	22.7	24.4	24.6	24.7	25.2	24.8	26.3	26.7
P5. Percentage of civilian employment by sex	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Males	52.4	53.4	52.4	52	52.4	51.8	51.8	51.3	51.8	52.5	52.4	52.5	53	53.6	55.3	54.8
Females	47.6	46.8	47.6	48	47.6	48.2	48.2	48.7	48.2	47.3	41.6	47.5	46.8	46.4	48.4	48.8
P6. Percentage of civilian employment by age group	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16 to 17	2.6	2.3	2.5	2	1.7	1.5	1.1	1.1	1.6	1.2	1.7	1.8	1.8	1.5	1.5	1.6
18 to 64	93.5	93.6	93.2	93.4	93.1	93.1	93.7	91.6	89.6	90.6	91.2	92	91.4	91.1	90.6	90.5
65+	3.9	4.1	4.2	4.6	5.2	5.3	5.2	7.3	8.8	8.3	7.1	6.2	6.8	7.4	7.9	8
P7. Percentage of civilian employment by race	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
White	93.1	94.3	94.5	93.9	94.4	93.3	93	94	93.7	93	93.6	94.3	93	93.8	94.1	93.4
Black	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0	0.6	0.4	0.6	0.7	0.8	0.8	0.6	0.4
Other	6.5	5.3	5.1	5.7	5.2	6.3	6.4	6	5.7	6.6	5.8	5	6.2	5.4	5.3	6.2
P8. Percentage of civilian employment by Hispanic Origin	2.2	2.2	1.9	1.8	1.6	2.2	2.7	1.9	1.7	2.5	2.2	2.8	3	3.6	3.6	3.1

P9. Percentage of civilian employment by industry	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Mining	0.8	0.8	1.5	1.3	0.8	0.6	1.3	1.1	1.5	1.5	1.6	1.2	0.8	0.5	1	1
Construction	10.4	11.1	10.7	10.9	10.6	8.7	7.8	7.3	8.1	8.2	9	8.8	8.6	8.5	8.5	9.4
Manufacturing-Durable Goods	3.5	2.5	3.5	3.4	2.8	2.8	3	3.4	2.8	2.5	2.9	3.6	3.2	3	3.2	3.6
Manufacturing-Nondurable Goods	1.9	1.5	1.3	1.8	1.2	1.7	2.1	1.5	1.3	2	1.4	2	2	1.7	2	1.7
Wholesale and retail trade	16.1	15.4	15.5	15.1	15	13.9	14.3	14.2	14.8	13	15.4	13.2	14.3	14.2	13.2	13.6
Transportation and utilities	4.7	4.6	4.1	3.5	4.3	4.5	4	4.1	4.6	4.9	5	4.7	4.7	4.6	4.9	5.2
Information	2	1.7	2.2	2.2	2.3	2.2	1.9	1.4	1.5	1.8	2.1	2	1.5	1.3	1.6	1.4
Financial activities	5.7	5.6	5.9	6.2	5.9	6.1	6.4	6.6	6.1	5.7	5.6	5.9	6.5	5.8	5.3	5.8
Professional and business services	6.4	7.2	7.4	7.3	7.5	8.9	9.1	9.1	8.9	8.1	8.4	8.6	8.3	8.9	9.4	9.7
Education and health services	21	20.3	20	20.9	21.3	22.7	23	24.5	22.2	22.3	20.8	22.6	21.6	22.8	21.8	21.6
Leisure and hospitality	9.9	11.4	11	10.2	10.3	10.8	12.6	12.9	11.1	12.5	11.9	11	10.7	10.8	11.5	10.5
Other Services	5.2	4.9	4.2	4.3	4.7	4.3	4.1	3.7	5.4	5	4.7	5.2	5.6	5.5	5.3	5.3
Public Administration	5.2	5.2	6	6.2	5.2	5	4.2	4.5	4.5	5.8	5.4	5.8	6.2	6.4	6.8	5.7
Agriculture	7.2	6.8	6.7	6.7	8.3	7.4	6.2	5.9	7.3	6.6	5.7	5.4	5.9	5.9	5.5	5.5
P10. Percentage of civilian employment by occupation	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Management, business and financial operations	16.8	15	15.4	15.7	17.7	17.1	17.3	16.1	17	18.7	16.7	17	18.9	18.1	17.6	18.3
Professional and related occupations	17.4	17.7	18.4	18.9	18.4	19.9	19.9	19.8	18.7	19.5	19.6	22.3	20.5	21.9	21.2	21.4
Service	17	19.1	17.8	16.6	18.4	19.5	19.9	20.2	18.8	18.7	19.6	18.4	18.7	18.9	20	18.7
Sales and related occupations	11.3	12.9	11.5	11.2	11.2	11.3	10.5	11	11	9.6	10.6	9.6	10.1	10	9.6	9.6
Office and administrative support	13	10.8	12.4	14	12	11.5	11.7	12.7	13.5	12.1	11.3	11.3	11.2	11.4	11.2	10.8
Farming, fishing, and forestry	2.7	2.5	2.2	1.4	1.5	1.9	2	1.7	1.8	1.7	1.5	1.9	1.7	1.8	1.4	1.6
Construction and extraction	7.5	9.3	8.6	8.9	8.3	6.3	6.3	5.5	6.2	6.3	7.1	6.7	6.3	6.2	6	6.8
Installation, maintenance, and repair	4.3	3.5	3.7	3.4	3	3.5	3.5	3.5	3.7	3.2	3.9	3.9	3.4	3.2	3.7	3.6
Production	4.5	4	4	4.1	3.8	3.9	3.9	3.9	3.6	3.9	3.7	3.7	3.2	3.7	4.1	3.5
Transportation and material moving	5.6	5.1	6	5.8	5.7	5.2	5.1	5.8	5.7	6.2	6	5.4	5.9	5	5.1	5.6

Indicator 1 - Nonfatal Work-Related Injuries & Illness Reported by Employers	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1.1 Estimated Annual Total Number of Work-Related Injuries and Illnesses	18,800	17,000	18,900	17,800	18,000	14,300	13,000	13,200	13,300	13,000	12,600	12000	12200	12700	11900	11500
1.2 Estimated Annual Total Work-Related Injuries and Illness Incidence Rate per 100,000 FTE	7,200	6,600	6,900	6,300	6,400	5,300	5,000	5,000	5,000	4,700	4,500	4300	4200	4300	3900	3800
1.3 Estimated Annual Total Number of Cases Involving Days Away From Work	5,900	5,600	5,500	5,100	6,000	5,000	4,400	4,200	4,200	4,000	4,000	4000	4000	3700	3800	5600
1.4 Estimated Annual Total Incidence Rate for Cases Involving Days Away From Work per 100,000 FTE	2,300	2,200	2,000	1,800	2,100	1,800	1,700	1,600	1,600	1,400	1,400	1,400	1,400	1,300	1,300	1,200
1.5 Estimated Annual Total Number of Cases Involving More Than 10 Days Away From Work	2,130	2,180	2,050	2,080	2,020	1,770	1,510	1,830	1,840	1,610	1,540	1640	1530	1620	1680	1500

Indicator 2 - Work-Related Hospitalizations	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2.1 Annual Number of Work-Related Hospitalizations	505	552	542	472	266	250	427	372	526	587	529	439	DNA	391	358	464
2.2 Annual Rate of Hospitalization per 100,000 FTE	109.3	116	111.3	95.9	55.3	54	94.5	79.8	110.7	121.3	105.8	87.5	78.6	78.2	70.8	89.9

Indicator 3 - Fatal Work-Related Injuries	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
3.1 Annual Number of Work-Related Traumatic Fatalities	39	50	45	54	40	50	36	49	34	28	28	36	38	32	28	38
3.2 Annual Fatality Rate per 100,000 FTE	8.4	10.5	9.2	11	8.2	12	8.2	11.2	7.9	6.2	6.1	7.8	8.3	7	6	7.8

Indicator 4 - Work-Related Amputations with Days Away from Work Reported by Employers	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
4.1 Estimated Annual Number of Amputations Involving Days Away from Work	-	30	30	20	90	-	60	20	20	-	-	*	*	20	30	20
4.2 Estimated Annual Incidence Rate of Amputations Involving Days Away from Work per 100,000 FTE	-	10	11	7	31	-	22	9	7	-	-	*	*	5	10	7

Indicator 5 - State Workers' Compensation Claims for Amputations with Lost Work-Time	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
5.1 Annual Number of Amputations filed with Workers' Compensation System with >4 days away from work	32	39	21	24	18	21	23	19	19	18	#	29	22	25	15	29
5.2 Annual Incidence Rate of Amputations filed with Workers' Compensation System per 100,000 Workers Covered with >4 days away from work	8.2	9.8	5.1	5.7	4.2	5.2	5.7	4.7	4.6	4.3	#	6.8	5.1	5.7	3.4	6.5

Indicator 6 - Hospitalizations for Work-Related Burns	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
6.1 Annual number of work-related burn hospitalizations	5	<5	<5	<5	<5	<5	<5	<5	< 5	6	2	<5	0	<5	<5	<5
6.2 Annual rate of work-related burn hospitalizations per 100,000 FTE	1.1	*	*	*	*	*	*	*	*	1.2	0.4	*	*	*	*	*

Indicator 7 - Work-Related Musculoskeletal Disorders with Days Away from Work	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
7.1 Estimated annual number of all musculoskeletal disorders	2,600	2,270	1,960	1,920	2,480	1,660	1,380	1,860	1,570	1,660	1,290	1540	1520	1350	1210	1230
7.2 Estimated annual incidence rate of all musculoskeletal disorders per 100,000 FTE	1,000	880	717	681	878	430	531	706	591	601	461	545	520	457	402	402
7.3 Estimated annual number of MSDs of the neck, shoulder & upper extremities	840	590	530	500	870	430	420	810	470	500	600	490	450	340	420	370
7.4 Estimated annual incidence rate of disorders of neck, shoulder, and upper extremities per 100,000 FTE	324	231	192	178	308	159	161	306	177	182	149	172	156	114	139	121
7.5 Estimated annual number of carpal tunnel syndrome cases	100	90	90	50	40	40	90	100	50	100	30	50	30	20	20	30
7.6 Estimated annual incidence rate of carpal tunnel syndrome cases per 100,000 FTE	36	36	34	16	13	15	36	40	20	35	9	18	11	5	8	10
7.7 Estimated annual number of musculoskeletal disorders of the back	1,120	1,040	1,000	970	1,140	760	620	840	590	720	580	660	640	540	460	520
7.8 Estimated annual incidence rate of musculoskeletal disorders of the back per 100,000 FTE	430	402	366	343	403	281	236	320	222	260	205	235	219	183	154	172

Indicator 8 - State Workers' Compensation Claims for Carpal Tunnel Syndrome	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
8.1 Annual number of carpal tunnel syndrome cases filed with State WC with >4 days away from work	143	107	60	41	31	27	32	18	20	28	31	31	25	22	25	26
8.2 Annual incidence rate of carpal tunnel syndrome cases filed with WC per 100,000 workers covered with >4 days away from work	36.7	26.8	14.5	9.7	7.3	6.6	7.9	4.4	4.8	6.7	7.3	7.2	5.7	5	5.6	5.7

Indicator 9 - Hospitalizations from or with Pneumoconiosis	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
9.1.1 Annual number of total pneumoconiosis hospital discharges	173	264	225	202	176	196	174	183	152	146	158	147	92	129	95	99
9.1.2 Annual rate of total pneumoconiosis hospital discharges per million residents	231.4	385.5	293	259.5	223.5	246.7	215.6	224.7	185.2	176.1	188.9	174.1	*	150.1173	109.1	112.4589
9.1.3 Annual, age-standardized, rate of total pneumoconiosis hospitalizations per million residents	213.8	320.2	267.5	235.6	201.3	221.6	187.1	192.5	154.6	145.2	153.2	136.1	83.7	123.1	79.7	79.47358
9.2.1 Annual number of coal workers' pneumoconiosis hospital discharges	9	<5	<5	<5	<5	<5	<5	<5	5	<5	<5	<5	*	5	7	8
9.2.2 Annual rate of coal workers' pneumoconiosis hospital discharges per million residents	12	*	*	*	*	*	*	*	6.1	*	*	*	*	5.8185	8	9.087584
9.2.3 Annual, age-standardized, rate of coal workers' pneumoconiosis hospital discharges per million residents	11.4	*	*	*	*	*	*	*	5.2	*	*	*	*	*	*	*
9.3.1 Annual number of asbestosis hospital discharges	156	252	211	190	173	189	166	174	141	141	152	138	*	118	87	90
9.3.2 Annual rate of asbestosis hospital discharges per million residents	208.7	332.7	274.7	244.1	219.7	237.9	205.7	213.7	171.8	170.1	181.8	163.4	*	137.3166	99.9	102.2353
9.3.3 Annual, age-standardized, rate of asbestosis hospital discharges per million residents	192.3	305	250	221.9	197.9	213.2	177	183.8	143.6	141	146.9	128	*	*	*	72.61774
9.4.1 Annual number of silicosis hospital discharges	8	7	10	8	<5	5	5	6	<5	<5	<5	<5	*	<5	<5	<5
9.4.2 Annual rate of silicosis hospital discharges per million residents	10.7	9.2	13	10.3	*	6.3	6.2	7.4	*	*	*	*	*	*	*	*
9.4.3 Annual, age-standardized, rate of silicosis hospital discharges per million residents	10.1	8.9	12.4	9.7	*	6.1	6.2	5.9	*	*	*	*	*	*	*	*
9.5.1 Annual number of other and unspecified pneumoconiosis hospital discharges	<5	<5	<5	<5	<5	<5	<5	<5	< 5	<5	<5	<5	*	5	<5	<5
9.5.2 Annual rate of other and unspecified pneumoconiosis hospital discharges per million residents	*	*	*	*	*	*	*	*	*	*	*	*	*	5.8185	*	*
9.5.3 Annual, age-standardized, rate of other and unspecified pneumoconiosis hospital discharges per million residents	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Indicator 10 - Mortality from or with Pneumoconiosis	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
10.1.1 Annual number of total pneumoconiosis deaths	17	18	19	23	15	25	32	21	18	13	26	31	24	17	13	19
10.1.2 Annual total pneumoconiosis death rate per million residents	22.7	23.8	24.7	29.5	20.3	31.5	39.6	25.8	21.9	15.7	31.1	30	23	17	12	18
10.1.3 Annual, age-standardized total pneumoconiosis death rate per million residents	21.2	22.1	22.6	26.5	20.3	31.5	39.6	25.8	18.5	13.2	25.3	26.26	21.6	16	*	21.6
10.2.1 Annual number of coal workers' pneumoconiosis deaths	<5	<5	<5	<5	<5	<5	<5	<5	< 5	0	0	<5	<5	0	0	0
10.2.2 Annual coal workers' pneumoconiosis death rate per million residents	*	*	*	*	*	*	*	*	*	*	*	<5	0	0	<5	1
10.2.3 Annual, age-standardized rate of coal workers' pneumoconiosis deaths per million residents	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10.3.1 Annual number of asbestos deaths	17	16	17	23	15	22	30	20	16	13	24	24	30	23	17	12
10.3.2 Annual asbestosis death rate per million residents	22.7	21.1	22.1	29.5	19	27.2	37.2	24.6	19.5	15.7	28.7	*	*	*	*	*
10.3.3 Annual, age-standardized asbestosis death rate per million residents	21.2	19.7	20.1	25.2	19	27.7	37.2	24.6	16.4	13.2	-	*	*	*	*	*
10.4.1 Annual number of silicosis deaths	<5	<5	<5	<5	<5	<5	<5	<5	< 5	0	1	*	*	*	*	*
10.4.2 Annual silicosis death rate per million residents	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10.4.3 Annual, age-standardized silicosis death rate per million residents	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10.5.1 Annual number of other and unspecified pneumoconiosis deaths	<5	<5	<5	<5	<5	<5	<5	<5	< 5	0	1	*	*	*	*	*
10.5.2 Annual other and unspecified pneumoconiosis death rate per million residents	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10.5.3 Annual, age-standardized pneumoconiosis death rate per million residents	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Indicator 11 - Acute Work-Related Pesticide Illness and Injury Reported to Poison Control Centers	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
11.1 Annual number of reported work-related pesticide poisoning cases	11	15	14	15	8	12	17	14	11	12	13	10	10	7	DNR	DNR
11.2 Annual incidence rate of reported work-related pesticide poisoning cases per 100,000 FTE	2.4	3.2	2.9	3.1	1.7	2.6	3.7	3	2.3	2.5	2.6	2	2	1.4	DNR	DNR

Indicator 12 - Incidence of Malignant Mesothelioma	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
12.1 Annual number of incident mesothelioma cases	18	13	17	11	11	7	13	12	< 19	20	13	14	20	26	13	11
12.2 Annual mesothelioma incidence rate per million residents	24	17.1	22.1	14.1	14	8.8	16.1	14.7	*	24.1	15.5	16.6	*	30.2562	14.9	12.5
12.3 Annual, age-standardized mesothelioma incidence rate per million residents	-	-	-	-	-	-	-	-	*	20.9	11.8	*	*	*	*	12.5

Indicator 13 - Elevated Blood Lead Levels Among Adults	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
13.1.1 Annual number of residents with elevated blood lead levels (>=10 mcg/dL)	-	-	-	-	-	-	34	29	37	68	-	44	30	107	116	87
13.1.2 Annual prevalence rate per 100,000 FTE	-	-	-	-	-	-	7.5	6.2	7.8	14.5	-	8.8	20.8	21.4	22.9	16.9
13.1.3 Annual number of incident cases	-	-	-	-	-	-	20	17	< 5	57	23	36	75	72	62	47
13.1.4 Annual incidence rate per 100,000 FTE	-	-	-	-	-	-	4.4	3.6	*	11.8	4.6	7.2	15	14.4	12.3	9.1
13.2.1 Annual number of residents with elevated blood lead levels (>=25 mcg/dL)	8	<5	6	<5	7	7	<5	<5	< 5	21	-	7	30	41	40	31
13.2.2 Annual prevalence rate per 100,000 FTE	1.7	*	1.2	*	1.5	1.5	*	*	*	4.3	-	1.4	*	8.2	7.9	6
13.2.3 Annual number of incident cases	8	<5	6	<5	7	7	<5	<5	< 5	20	<5	36	26	24	22	16
13.2.4 Annual incidence rate per 100,000 FTE	1.7	*	1.2	*	1.5	1.5	*	*	*	4.1	*	7.2	5.2	4.8	4.3	2.9
13.3.1 Annual number of residents with elevated blood lead levels (>=40 mcg/dL)	<5	<5	<5	<5	<5	<5	<5	<5	< 5	<5	-	<5	7	6	2	1
13.3.2 Annual prevalence rate per 100,000 FTE	*	*	*	*	*	*	*	*	*	*	-	*	1.4	1.2	*	*
13.2.3 Annual number of incident cases	<5	<5	<5	<5	<5	<5	<5	<5	< 5	<5	<5	<5	<5	4	0	1
13.2.4 Annual incidence rate per 100,000 FTE	*	*	*	*	*	*	*	*	*	*	*	*	*	0.8	0	0.2

Indicator 14 - Workers' Employed in Industries at High Risk for Occupational Morbidity	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
14.1 Number of employed persons in high morbidity risk NAICS industries	21,464	21,557	22,383	22,786	23,893	23,135	23,277	23,122	23,655	23,819	20,629	21784	21762	21522	21690	22045
14.2 Percentage of employed persons in high morbidity risk NAICS industries	6.8	6.6	6.5	6.4	6.6	6.8	6.9	6.9	6.9	6.8	5.7	5.8	5.8	5.7	5.8	5.9

Indicator 15 - Workers' Employed in Occupations at High Risk for Occupational Morbidity	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
15.1 Average number of employed persons in high morbidity risk Bureau of the Census Occupations	41,033	44,853	45,031	43,318	82,571	78,934	48,716	48,388	54,555	62,519	60,853	56,957	61,065	56,340	62188	66562
15.2 Percentage of employed persons in high morbidity risk Bureau of the Census Occupations	14.5	14.8	14.5	13.8	26.6	26.4	16.3	16.1	17.8	20	18.1	16.9	18.4	17	18	18.5

Indicator 16 - Workers' Employed in Industries & Occupations at High Risk for Occupational Mortality	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
16.1 Average number of employed persons in high mortality risk Bureau of Census industries	97,046	103,274	109,157	102,065	110,875	96,556	55,948	46,518	95,868	99,501	99892	94805	95,798	93070	99603	107507
16.2 Percentage of employed persons in high mortality risk Bureau of Census industries	25.8	26.5	27.4	25.2	27.4	25.2	18.7	15.5	24.7	25.1	23.9	22.7	23.1	22.5	23.6	24.5
16.3 Average number of employed persons in high mortality risk Bureau of Census occupations	63,966	66,402	71,232	67,411	80,925	67,915	45,487	44,500	73,045	75,764	70,868	70,686	71,073	67,172	72488	77,454
16.4 Percentage of employed persons in high mortality risk Bureau of Census occupations	17	17.1	17.9	16.7	20	17.8	15.2	14.8	18.8	19.1	17	16.9	17.1	16.3	17.2	18.5

Indicator 17 - Occupational Safety & Health Professionals	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	*	*	*	*
17.1 Number (Rate) of board-certified occupational physicians per 100,000 FTE	5 (1.1)	5 (1.1)	5 (1.1)	6 (1.0)	7 (1.2)	7 (1.5)	8 (1.7)	-	9 (1.9)	-	10	10	*	*	*	*
17.2 Number (Rate) of ACOEM members per 100,000 FTE	8 (1.7)	8 (1.7)	9 (1.8)	10 (2.0)	11 (2.3)	12 (2.6)	14 (3.0)	-	15 (3.2)	15 (3.1)	9	8	*	*	*	*
17.3 Number (Rate) of board-certified occupational health registered nurses per 100,000 FTE	5 (1.1)	6 (1.3)	6 (1.2)	6 (1.2)	7 (1.5)	8 (1.7)	9 (1.9)	-	-	9 (1.9)	9	10	*	*	*	*
17.4 Number (Rate) of members of the AAOH per 100,000 FTE	8 (1.7)	10 (2.1)	8 (1.6)	7 (1.4)	8 (1.7)	7 (1.5)	0 (0)	-	8 (1.7)	-	*	*	*	*	*	*
17.5 Number (Rate) of board-certified industrial hygienists per 100,000 FTE	16 (3.5)	16 (3.4)	18 (3.7)	21 (4.3)	23 (4.8)	24 (5.2)	20 (4.3)	-	11 (2.3)	17 (3.5)	18	11	*	*	*	*
17.6 Number (Rate) of AIHA per 100,000 FTE	31 (6.7)	27 (5.7)	27 (5.5)	17 (3.5)	26 (5.4)	24 (5.2)	21 (4.5)	-	24 (5.1)	14 (2.9)	2	21	*	*	*	*
17.7 Number (Rate) of board certified safety health professionals per 100,000 FTE	18 (3.9)	26 (5.5)	26 (5.3)	28 (5.7)	33 (6.9)	36 (7.8)	39 (8.4)	-	49 (10.3)	57 (11.8)	58	70	*	*	*	*
17.8 Number (Rate) of ASSE membership per 100,000 FTE	95 (20.6)	118 (24.8)	103 (19.1)	94 (19.1)	120 (25.0)	104 (22.5)	125 (26.8)	-	156 (32.8)	142 (29.3)	162	198	*	*	*	*

Indicator 18 - OSHA Enforcement Activities	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
18.1 Annual number of employer establishments inspected by OSHA	487	292	460	333	358	359	411	369	357	295	344	210	250	201	290	333
18.2 Number of OSHA-Covered Establishments that are Eligible for OSHA Inspection (excluding mines & farms)	39,242	37,765	38,838	40,176	40,708	40,297	39,900	39,756	40,144	40,841	41544	42485	43457	46127	46643	46774
18.3 Percentage of OSHA-Covered Establishments Eligible for Inspection that were Inspected by OSHA	1.2	0.8	1.2	0.8	0.9	0.9	1	0.9	0.9	0.7	0.8	0.5	0.6	0.4	6720	0.7
18.4 Annual Number of Employees whose Work Areas were Inspected by OSHA	10,575	7,767	7,807	8,104	10,296	7,612	6,867	4,764	4,425	7,339	4995	4720	5907	5436	383739	6173
18.5 Number of OSHA-Covered Employees (excluding miners & farm workers) Eligible for Inspection	329,060	338,542	350,193	360,351	360,338	343,982	340,358	343,181	350,237	356,331	359555	368173	374760	379057	6	388885
18.6 Percentage of OSHA-Covered Employees Eligible for Inspection Whose Work Areas were Inspected by OSHA	3.2	2.3	2.2	2.2	2.9	2.2	2	1.4	1.3	2.1	1.4	1.3	1.6	1.4	1.8	1.6

19.1 Total amount of workers' compensation benefits paid (in thousands)	$211,460	$227,321	$234,247	$254,661	$260,835	$261,105	$266,821	$252,550	$250,542	$247,003	$245,909	$253,017	$261,105	$253,763	$237,377	$230,000
19.2 Average amount of workers' compensation benefits paid per covered worker	$542	$568	$567	$602	$615	$642	$659	$622	$605	$587	$580	$586	$596	$574	$531	$508

Indicator 20 - Low Back Disorder Hospitalizations	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
20.1 Annual number of work-related surgical low back disorder hospitalizations for persons age 16 years or older	*	*	*	*	*	*	59	77	92	91	89	*	*	*	*	*
20.2 Annual rate of work-related surgical low back disorder hospitalization per 100,000 FTE	*	*	*	*	*	*	12.7	17	19.4	18.8	17.8	*	*	*	*	*
20.3 Annual number of work-related low back disorder hospitalizations for persons age 16 years or older	122	131	105	93	70	53	105	71	117	112	108	*	*	*	*	*
20.4 Annual rate of work-related low back disorder hospitalization per 100,000 FTE	26.4	27.5	21.6	18.9	14.6	11.4	23.2	15.2	24.6	23.1	21.6	*	*	*	*	*

Indicator 21 - Asthma Among Adults Caused or Made Worse by Work	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
21.1 Weighted estimate of the number of ever-employed adults with current asthma who report that their asthma was caused or made worse by exposures at work	*	*	*	*	*	*	*	40,970	45,762	34,816	40,177	39,790	38,160	41,546	41,882	42398.43
21.2 Estimated proportion of ever-employed adults with current asthma who report that their asthma was caused or made worse by exposures at work	*	*	*	*	*	*	*	59%	60.80%	56.70%	55.40%	60.7	58.6	53.2	53.3	52.17643

Indicator 22 - Work-Related Severe Traumatic Injury Hospitalization	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
22.1 Annual number of work-related inpatient hospitalizations for severe traumatic injury for persons age 16 years or older	*	*	*	*	*	*	*	*	55	77	72	*	*	*	*	*
22.2 Annual crude rate of work-related inpatient hospitalizations for severe traumatic injury per 100,000 FTE	*	*	*	*	*	*	*	*	11.6	15.9	14.4	*	*	*	*	*

Indicator 23 - Influenza Vaccination Coverage Among Healthcare Personnel	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
23.1 Proportion of hospital care personnel Influenza vaccination coverage in acute care hospitals	*	*	*	*	*	*	*	*	*	*	83.8	84	83.2	87.1	89	*

Indicator 24 - Occupational Heat-Related ED Visits	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
24.1 Annual number of ED visits for occupational heat-related illness for persons 16 years and older	*	*	*	*	*	*	*	*	*	6	9	*	10	8	6	5
24.2 Annual crude rate of ED visits for occupational heat-related illness per 100,000 FTE	*	*	*	*	*	*	*	*	*	1.2	1.8	*	*	*	*	*

Key:

* Result is not statistically significant or data not available

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For detailed information about data sources, data and indicator limitations, and instructions for these indicators, please refer to the guidance document found at www.cste.org/page/OHIndicators